MARCH • 1961

FIREMEN

VOLUME 28, NUMBER 3, COPYRIGHT © 1961 NATIONAL FIRE PROTECTION ASSOCIATION PRINTED IN U. S. A.

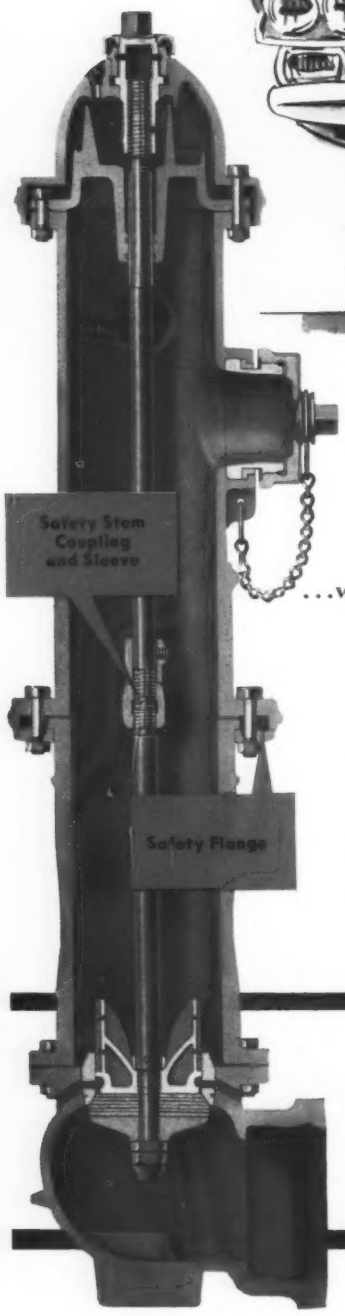
Training Tower at Seattle, Washington — *see page 7*

TIONAL FIRE
TECTION
OCIATION

65th year

FIRE DEPARTMENT TRAINING FACILITIES - - - - - - - - - - - page 9

LIMITATIONS OF SMALL LINES - - - page 16



repair hydrant traffic damage

FAST

...without loss of water...without water shut-off...without digging

The Mueller AWWA Improved Fire Hydrant is quickly put back into action when knocked over.

Mueller's Safety Flange design prevents breakage of the hydrant barrel and bent or broken operating stem. Hydrant safety mechanism snaps off cleanly just above the ground line.

The compression-type main valve stays closed. No water is lost to affect pressure at neighboring hydrants. No damage is caused by flowing water. Lower stem section is held solidly in place to permit easy repair without digging.

The simple, inexpensive repair kit shown below contains all parts needed to completely restore hydrant to service in a matter of minutes.

Safety Flange Repair Kit

Consists of safety flange, safety stem coupling, safety flange gasket and can of Mueller hydrant lubricating oil.

Write for complete information and specifications.

MUELLER CO.

DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited; Sarnia, Ontario

4383

Seagrave

Pump Shift

Located where it should be!

Instant Finger Tip Control by Pump Operator.

Gets water faster!

MAIL THIS COUPON

FM-3-61

THE SEAGRAVE CORPORATION, COLUMBUS 7, OHIO. Please send complete information on:

☐ CAB FORWARD ☐ CONVENTIONAL ☐ AERIALS ☐ PUMPERS ☐ OTHER_____

Name_____ Title_____

Address_____

King-Seagrave Ltd., Woodstock, Ont.

BRIGHTON
BRIGHTON
3
FIRE DEPT

ON THE ROLL, five-unit fleet of Mack apparatus leaves station house. Fast starts and fast acceleration are typical of Mack apparatus, a big reason why Macks are favored by so many crack departments.

This town wanted nothing but the best

With an assessed valuation per capita said to be second highest of any fire district in the state, Brighton, N. Y., realized as far back as 1936 it needed the finest fire apparatus.

The decision of the Board of Fire Commissioners through the years: an all-Mack fire-fighting fleet that is the pride and joy of the well-manned Brighton Fire Department.

With a Mack 85-foot aerial and four Mack pumpers . . . 28 paid firemen . . . and 111 volunteer firefighters . . . the Brighton Fire Department is ready and able to handle the most demanding fire-fighting jobs.

Besides wanting the finest possible fire apparatus made, Brighton chose Macks for another very good reason: close-at-hand Mack parts and service, as everywhere in the United States. No waiting for a company representative . . . no weeks of waiting for delivery of a needed part from a distant city.

There are many additional reasons for Mack fire apparatus superiority—Thermodyne® diesel and gasoline engines to 276 hp . . . standard or automatic transmissions . . . air or hydraulic brakes . . . gear ratios and equipment for exact fire-fighting jobs.

Why not equip your department with the finest apparatus? It's simply a matter of making yours Macks. Mack Fire Apparatus, Allentown, Pennsylvania. Mack Trucks of Canada, Ltd., Toronto, Ontario. 8127

MACK
FIRST NAME FOR
FIRE APPARATUS

COMPLETE LINE OF PUMPERS—500 to 1250 GPM...SQUAD AND HOSE WAGONS...AERIALS 65′ to 146′...COMBINATION LADDER TRUCKS

MOCK SCHOOL FIRE brings Mack 85-foot service aerial and 750-gpm triple combination pumper to the scene fast. Chief Carl Guldenschuh directs activities of aerial crew, while pumper driver contacts headquarters on two-way radio. Aerial and pumper are both powered by famous Mack 707C Thermodyne fire apparatus engines.

All Models of IND
FIRE PUMPS Appr
by Factory Mutual

FOG MIST . . .
COARSE SPRAY . . .
LONG DISTANCE STREAM . . .

A quick twist of the adjustable nozzle gives you what you need for any type of fire fighting! That's one of the reasons users of **INDIAN FIRE PUMPS** express their enthusiasm like this:

You Get Them ALL with

INDIAN

FIRE PUMPS! The World's Be

- **"INDIAN FIRE PUMPS** should be standard equipment on every piece of fire apparatus."
  Allan H. Clark, Chief, Lakefield, Ont., Fire Dept.
- "We have used **INDIANS** for years and they are indispensable. They are ideal for many uses."
  Ray H. Earle, Chief, Massillon, Ohio, Fire Dept.
- **"INDIAN FIRE PUMPS** are essential equipment and have proved their value time and time again. I have the highest regard for them."
  G. R. McAlpine, Chief, Oklahoma City Fire Dept.

THREE GREAT MODELS TO CHOOSE FROM!

No. 90 SLIDING PUMP TYPE

Extremely popular. Thousands in use. Armco Zinc Grip Steel, solid brass or chrome tanks. Spare parts always available.

Send for circular on New No. 90 Fiberglass INDIAN FIRE PUMP. It's NEW — LIGHT WEIGHT — Will not rust or corrode — A solid brass pump.

No. 80 LEVER TYPE PUMP and HANDLE

Armco Zinc Grip Steel, brass or chrome tanks. Continuous high pressure. Slings on back leaving arms free for quickly climbing about.

SEND FOR NEW CATALOG

D. B. SMITH & CO. "FOR 73 YEARS THE LEADERS" **408 Main St., Utica 2, N.Y.**

Pacific Coast Branches:

Hercules Equipment & Rubber Co., Inc. San Francisco 7, Calif. San Jose, Calif.
Halprin Supply Co. Los Angeles 15, Calif.
Fred E. Barnett Co. Portland, Ore.
Fred E. Barnett Co. Klamath, Ore.
Mill & Mine Supply Inc. Seattle 4, Wash.
L. M. Curtis & Sons Salt Lake City, Utah

Canadian Agents:
Fleck Bros. Ltd. Vancouver, B. C., Canada
C. E. Hickey & Sons, Ltd. Hamilton, Canada

FIREMEN

Volume 28 **Number 3**

A monthly magazine published for the fire service members of the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Massachusetts.

FIREMEN magazine is available only through membership in the NFPA. Complete details on membership can be obtained by writing to the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Massachusetts.

Highlights of this Issue

	Page
Ghost Fire Companies	8
Fire Department Training Facilities	9
Elevating Platform Apparatus	12
Highlights of Municipal Entries Submitted to the 1960 Fire Prevention Contest	14
Limitations of Small Lines	16
Unusual Ladder Rescue	18
Pump Makers for 75 Years	19
Regional Round-Up	22
Letter to FIREMEN	24
Fire Service Meetings	27
Firemen's Training in the Months Ahead	30
Buying New Equipment?	36
Index to Advertisers	36

Much is heard these days about recession and unemployment. What is generally overlooked is that cities have been growing at a prodigious rate and their fire departments, in the majority of cases, have not grown apace. Right now the fire departments in the United States could use an additional 100,000 paid fire fighters and still be below the desirable manning schedules for efficient operations. Many pumpers have only two or three men on duty and some ladder trucks are manned only by a driver.

Since many fire fighters still work excessively long hours, it is obvious that a reduction in hours would also provide many jobs even to maintain the present low levels of manning. Actually, protection of the urban population of the United States, which now exceeds 130,000,000 persons, would require at least 300,000 full paid fire fighters instead of approximately 135,000 now on the job.

As should be well known, fire losses recently have exceeded one billion dollars each year. Much of this loss, in addition to heavy loss of life, results from inadequate fire protection. If the fire fighting forces were increased by 100,000 men, this would add wage earners who would spend at least $500,000,000 a year in the various local communities buying food, clothing, housing, automobiles, etc. This money is now being needlessly wasted in the blackened ruins of useless fires because fire department strength has not been kept up.

Fire fighting is one area where automation does not reduce the need for men. It still takes men to raise ladders, run hose lines and do the thousands of other things that fire fighters are trained to do to protect the public.

If the fire force were brought up to proper levels there could be a greatly accelerated fire prevention program. Companies with only one to three men on duty cannot do much inspection work. Training is also limited in undermanned departments as there are not men enough to carry out many basic operations.

FIREMEN magazine has stated before that the investment which gets the most return for the dollar is money spent at the local level for goods and services. It not only produces needed local services but the dollars remain at home to aid local business. On the other hand, when a tax dollar is sent to Washington it is estimated that, on the average, about 40 cents may eventually get back to the local taxpayers.

If businessmen are complaining about slack sales perhaps the community has not been creating enough jobs for the growing population. One good way to start is in bringing the local fire department companies up to full strength, in providing new companies that may be needed, and in reducing the work week of fire fighters to a level which will make the job attractive and in line with modern concepts.

One thing wrong is the false assumption that local government should be cheap and inferior. Local government should be the best that our present level of civilized community living can provide. It has been said that the true test of the effectiveness of democracy is in the job it does at the local level. And local government is chiefly concerned with personal services including education, health, fire protection, streets, police protection, etc.

If we are content to have skimpy local services we will continue to lose approximately 1,000 lives per month by fire. These fires all occur at the local level. Our "national fire loss" is merely a total of the destruction caused by many local fires in your community and other communities very much like yours.

The modern training facilities of the Seattle, Washington, Fire Department are featured on this month's cover. This installation is representative of a current trend in the improvement and new development of training facilities for fire departments in a number of cities, large and small, in the United States.

On pages 9 through 11 of this issue is a summary of a survey of these training facilities together with description of their cost and special features. The pictures show only those facilities which have been built within the past ten years, but they present ample evidence that the fire service is continuing to improve in this basic, important function of training its officers and men. (*Cover picture by Seattle Fire Department.*)

WARREN Y. KIMBALL, Managing Editor; PAUL R. LYONS, Editor; HENRY S. GERE, Advertising Manager; ROWENA D. DORES, Editorial Assistant; SHIRLEY TOBEY, Fire Service Department; VIRGINIA STILES, Advertising Department.

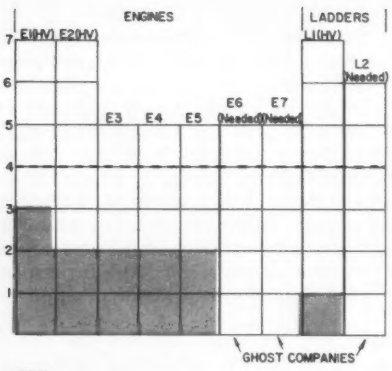


Figure 1

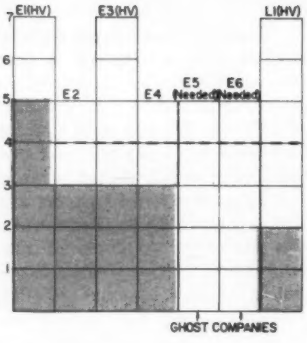


Figure 2

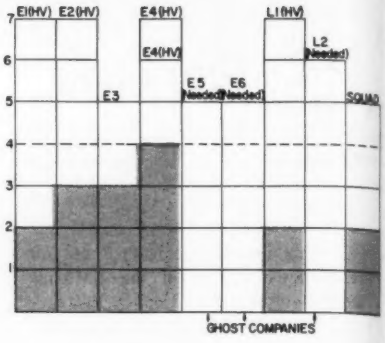


Figure 3

GHOST FIRE COMPANIES

PREVIOUSLY, we have discussed the problem of fire departments whose apparatus is partly manned by "ghost firemen" as we define essential positions on the apparatus to which no on-duty men are assigned. This is but part of the critical manpower shortage in fire departments protecting many growing communities.

In addition to ghost firemen we have "ghost fire companies." To have proper protection against fire, all areas of a community must be within the required running distance of engine and ladder companies. There must be enough companies to answer alarms and to handle serious fires without leaving essential areas remote from covering units in quarters. When built-up areas are more than a mile and a half from existing engine companies and there are not enough companies to permit redistribution of existing companies, new engine companies are especially needed. In addition, there must be enough ladder companies to give prompt truck company support in all areas where this service is needed and this generally means a ladder company within a mile of all high value areas and not over two miles from other built-up areas.

Now let us look at some typical fire department situations in medium-sized cities. Figure 1 shows a department which has five stations housing engine companies. Two of these are in high value districts. There is a ladder truck at headquarters. However, the city covers a considerable area and at least two additional engine companies are needed to provide reasonable distribution for fast initial attack and a second ladder truck is badly needed. At present only one man is assigned to ladder or truck service. As shown in Figure 1, there are only twelve men on duty in the entire department. Four of these are at headquarters and each of the other companies has two men. To bring up the existing companies to a minimum of four men each, the fire force would have to be doubled.

However, this would not provide the needed coverage. To provide the minimum manpower for effective companies the three additional companies would require another dozen men on duty. Thus, the present force is not 50 per cent below the minimum effective level but is only 33 per cent of this level. To bring all present and needed companies, including those designated as high value, up to the proper level for efficiency would take another sixteen men. This means that rather than a dozen men on duty there should be 52 men on duty with the companies. Thus, present on-duty manpower is under 25 per cent of what it should be. As has been pointed out several times in NFPA FIREMEN, 2.3 to 2.5 fire fighters per 1,000 population are needed to provide a reasonable level of manpower in cities of medium size. The community illustrated in Figure 1 has only one fire fighter per thousand. This provides only a corporal's guard assisted by "ghost crews."

Figure 2 shows a fire department operating four engine companies and a ladder company out of four stations with sixteen fire fighters on duty. At least two more engine companies are needed to cover the city. The headquarters engine company has five men but the ladder company, which is a high value company and should have seven men on duty, has only two. The other engine companies have only three-man crews. Five additional men are needed to bring the existing badly undermanned engine and ladder companies up to the four-man minimum and fifteen additional men are needed to bring these companies up to full strength. Existing companies have only 52 per cent of proper full manning and only one individual company has what may be considered reasonably effective manning. However, as the department is short two full five-man companies, a total of 25 more fire fighters are needed on duty. Thus, the fire force is operating at only 39 per cent of desirable strength. To provide the needed companies and maintain at least five men with all high value companies would call for fifteen additional fire fighters on duty.

Figure 3 illustrates still another fire department which is short of fire companies. In this case there are two "ghost engine companies" and a "ghost ladder company." Only one existing company has the minimum four-man crew on duty. Eight more men should be on duty to have four-man crews on each existing company. Twelve additional men are needed to provide three additional companies. Instead of sixteen fire fighters on duty with six companies as at present, there should be not less than 36 men on duty with nine companies. To man the total number of companies needed would require fifty-four fire fighters on duty. Instead of having a department that is 45 per cent manned, this department is only 30 per cent manned.

HAWTHORNE, CALIFORNIA. Population, 33,000; training area, 75 by 100 feet. Three-story, cement block drill tower built in 1957 for $1,900. The fire training conducted in drill tower. Pits for flammable liquid fires planned. Classroom facilities seat 20.

WILMINGTON, NORTH CAROLINA. Population, 44,000; training area, 3 acres. Five-story, brick drill tower built in 1960 cost $75,000 (all facilities). There is a fire test building and three pits for flammable liquid fires. Two classrooms seat 50.

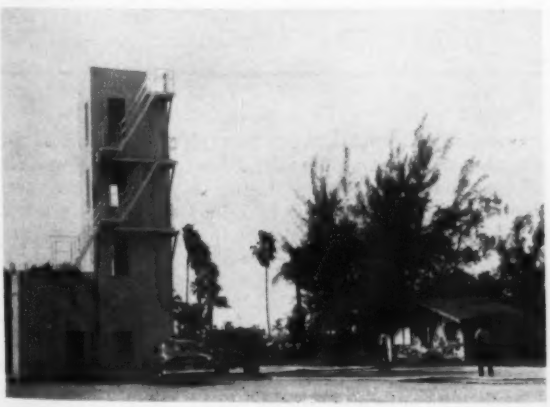
AMARILLO, TEXAS. Population, 138,000; training area, 100 by 100 feet. Five-story, masonry, concrete and steel drill tower built in 1953 for $27,000. Pits for flammable liquid fires, no fire test building, classroom facilities at fire station.

FIRE DEPARTMENT TRAINING FACILITIES

A NUMBER of inquiries that come to the NFPA Executive Office concern the construction of drill towers and other training facilities for municipal fire departments. In the past few years there has been a noticeable spurt in the development of such facilities for large and small municipalities. As an example of this trend we show in these pages pictures of training facilities which have been built within the past ten years. Others, not mentioned in this article, were reported in previous issues of the magazine (see page 32).

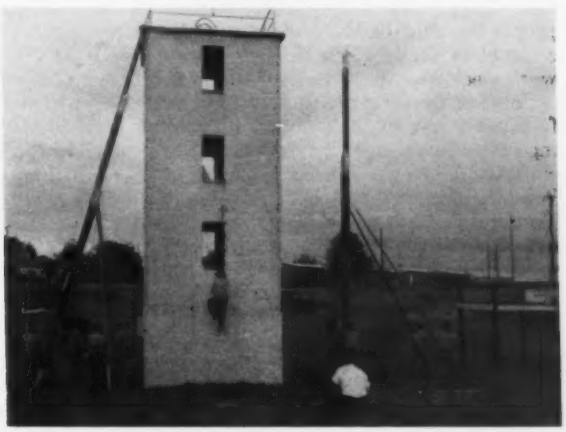
Years ago, many fire departments were satisfied to build a simple drill tower for hose and ladder evolution, perhaps incorporating sprinkler and standpipe equipment or possibly a "smoke room" for gas mask training. The trend today, however, is to develop complete training facilities for every function of the fire department. A well-planned modern municipal fire department training center features not only a drill tower but some sort of fire training building, pits for flammable liquid fires, pumper test pits, large paved areas for driver training, classrooms and administration facilities, and perhaps laboratories, maintenance shops and other features that can be used to develop a thorough training program for every officer and man in the department. In larger cities there is also a trend for "multiple company" training which not only gives officers a chance to exercise command in tactical procedures but also improves the teamwork of fire companies.

The biggest problem facing fire chiefs and training officers today is the limited amount of time to schedule



WEST PALM BEACH, FLORIDA. Population, 56,000; training area, 1½ acres. Four-story, concrete block drill tower built in 1954 for $15,000. Pits for flammable liquid fires. No fire test building. Classroom facilities in tower seat 25; at fire station seat 15.

ALBANY, GEORGIA. Population, 56,000; training area, 2 acres. Four-story, concrete drill tower built in 1954 for $5,000. Pits for flammable liquid fires. No fire test building. Classroom facilities seat 80.



TRAINING FACILITIES IN TYPICAL CITIES

City	Population	Drill Tower					Pit for Flammable Liquid Fires	Fire Test Building	Classroom Facilities
		Training Area	Built	Stories	Type	Cost			
Battle Creek, Michigan	44,000	Local properties	1926	5	Brick and concrete		No	No	In stations
Lewiston, Maine	41,000	1 acre	1955	1½ to 3	Wooden	$4,500	3 pits	In drill tower	Central fire station — 30 men
Salina, Kansas	43,000	Headquarters	1950	4	Concrete block, brick face, steel floors and fire escapes	Included in cost of headquarters	No	No	Headquarters station — 15 men
Cincinnati, Ohio	503,000	L-shaped drill yard and fire test area	1939	7	Concrete and brick	$325,000 (fire bldg.) $92,650 in 1959	9 ft. tank pits planned	2-story concrete and brick	Adjacent to drill tower — seats 125
Norfolk, Virginia	306,000	300 by 600 ft.	1949	6	Brick, concrete floors and roof	$40,000	No	No	Seats 75
Dallas, Texas	680,000	5 acres	1949	6	Brick and steel	$24,000	Open and closed pits	No	4 each seating 25
Omaha, Nebraska	302,000	200 by 250 ft.	1928	6	Brick		Planned	At Rescue Trng. Ctr.	2 each seating 40
Indianapolis, Indiana	476,000	Paved yard	1950	4	Brick and concrete	$35,000 (inc. classroom)	No	No	Approx. 250
Seattle, Washington	557,000	¼ city block	1951	4	Reinforced concrete	$40,000	Yes	No	Approx. 80
Portland, Oregon	373,000	1 acre paved ½ acre paved 2 acres unpaved	(2) 1936 1950	6 each	Reinforced concrete	Old tower $30,000, new tower included with central station	Yes with other "props"	Fire room in basement of tower	Small classroom in old tower, auditorium seating 200 in central station
St. Louis, Missouri	750,000	Approx. ½ acre	1929	5	Brick and reinforced concrete		At Naval Depot	At CD Rescue School	Two — seating 125 and 40
Rockford, Illinois	127,000	3 acres	1918	2	Brick and reinforced concrete	Leased	Pits, tanks	Yes	Headquarters — seats 150
Tacoma, Washington	148,000	New area being planned	1934 (old tower)	4	1st floor brick, 3 floors frame		At Naval Base	No	One — seats 25
West Allis, Wisconsin	68,000	Approx. ½ acre paved	1955	5	Masonry and steel	$50,000	No	In tower	Seats 30
Redwood City, California	46,000	Paved area	1954	4	Wood frame	$17,000	No	Smoke room in tower	3 — seating 40, 30 and 15
Warwick, Rhode Island	69,000	CD area	1956	4	1st floor cinder block, others wood	$30,000	Yes	No	3 — each seating 20
Yakima, Washington	43,000	Approx. ½ acre	1948	5	Brick	$18,000	No	No	3 — seating 50, 20 and 10
Evanston, Illinois	79,000	Limited	1949	4	Concrete w/brick	$12,000	No	No	No. 1 Fire Station seating 100
Springfield, Ohio	83,000	Approx 5 acres	1952	6	Cinder block and wood	$2,500	Yes	Yes	Headquarters — seats 75

proper training for every member of the department — a problem made more difficult because of a shorter work week and the current manpower problem.

Some of the larger cities that have built new training facilities in recent years or are in the process of building include Baltimore, Maryland; Boston, Massachusetts; Chicago, Illinois; Memphis, Tennessee; and Washington, D. C. Los Angeles, California, and Toronto, Ontario, are among other cities now planning expansion of their training facilities.

Smaller cities, however, are keeping pace with the trend, as indicated by the article describing training in West Allis, Wisconsin, in last month's issue.

A survey of cities of 25,000 or more population disclosed at least part of the municipal fire department training picture. It will be noted in the table below that most of the cities of 100,000 or more population have drill towers, pumper test pits and facilities for training with flammable liquid fires. However, in cities of less than 100,000 population, a much smaller percentage have these basic training facilities. In a few years, though, this situation may change.

Population	Over 100,000	50,000 to 100,000	25,000 to 50,000
No. Cities Responding	39	55	71
No. Having Tower	33	38	33
Pumper test pit	24	27	16
Flammable Liquid Pits	23	23	28

Like other fire department expenditures, training facilities are a long-term investment for the municipality. As such, the ideal training facilities permit a fire department to give substantial training to every officer

and fire fighter down to the newest recruit. Since the major fire department problem is controlling fires, realistic fire control training has to be included somewhere in the program.

Many fire departments are fortunate enough to obtain an area isolated from the residential and business districts of the municipality where fires can be created in Class A materials, flammable liquids, liquefied petroleum gas or electrical installations without bringing objections from some members of the community because of the necessary smoke and noise. A few fire departments to some extent have split their training facilities so that actual fire training is conducted on the outskirts of the city while basic hose and ladder evolutions, driver training, pump testing and classroom work are, perhaps, conducted at a training site near the headquarters station in the center of the city. Frequently, industrial concerns have waste products or scrap materials which a fire department can burn for realistic training, and, of course, in recent years many fire departments have taken the opportunity of burning condemned buildings in exercises ranging from individual fire company training to full scale mutual aid operations.

For most fire departments the drill tower still forms the nucleus of the training facilities, although a few incorporate the drill tower with a fire training building, thus providing a great deal of flexibility to the installation. The booklet *Firemen's Training Centers*, published a few years ago by a subcommittee of the NFPA Committee on Fire Service Training, includes a number of fundamentals which should be considered in the design and construction of training facilities. For example, the following excerpt, taken from the booklet, contains some general advice on drill towers:

> One of the most useful structures for any training center is a drill tower. It provides the best means of training fire fighters in those basic but important hose and ladder evolutions which lead to success on the fire ground.
>
> Generally, such towers are four to five stories in height, sometimes topped by a "per thouse." They may be of simple wood frame construction, of reinforced concrete, or other suitable construction. They should be at least 30 feet square to permit complexity in training problems. A drill tower may have a variety of types of windows, doors, and fire escapes. It is preferable that there be standpipe and sprinkler connections so that fire companies will quickly develop the proper routine of connecting to and supplying these systems. The tower might also be designed to withstand interior fires and have interior partitions to provide variety in the fire attack problems, or it may be attached to such a fire training building. The entire tower, of course, should be structurally sound both for the safety of the men in training and for withstanding the force of hose streams which might be directed into it by deck guns or ladder pipes. Each floor should be equipped with floor drains and scuppers or otherwise designed to provide quick runoff of water.

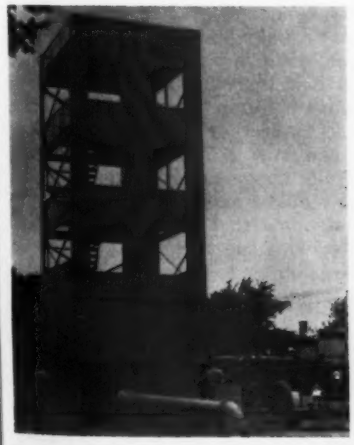
Other subjects covered in the booklet include fire training buildings, installations for flammable liquid fires, water supply, pump instruction facilities, control towers and other facilities. (*Price, $1.00 per copy.*)

Frequently, inquiries are made about the cost of drill towers and other training facilities for municipalities. On these pages, therefore, the information on each municipal training center includes the estimated cost of construction as well as data on other facilities available at the time the survey was made.

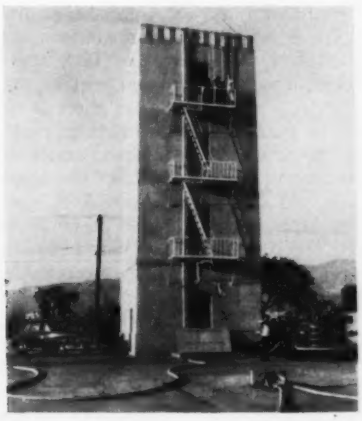
It will be noted, by comparing the table on page 10 with the photo captions, that municipal training centers built within the past ten years have much larger areas than those built twenty or thirty years ago, indicating the trend towards "complete" training centers. If adequate training is to be given to one or more fire companies then the training grounds must be large enough to permit pumpers and ladder trucks to move to position freely. Of course, it is also essential to create a variety of problems for the operators of pumpers and aerial ladders to simulate as closely as possible the difficult conditions they will encounter on the fire ground. In some cases this means that ground and overhead obstructions might be included, or at least simulated, around the training building.

Other desirable features in municipal training centers include: pumper test pits where operators can get practice in drafting and where acceptance tests or annual

(*Continued on page 32*)



HUTCHINSON, KANSAS. Population, 38,000; training area, approximately 1 acre. New, four-story, steel frame, open drill tower built in 1960 for $14,000. Dedicated to Chief Fred R. Dimond. Pumper test pit also featured. Classroom at headquarters.



BURBANK, CALIFORNIA. Population, 91,000; training area, ¼ acre. Four-story, reinforced concrete drill tower built in 1950 for $17,000. Fire test building in tower. Classroom facilities in tower seat 30; at headquarters seat 50 and in fire stations seat 10 each.

FLINT, MICHIGAN. Population, 197,000; training area, 250 by 750 feet. Five-story drill tower (first floor, brick and steel; upper four floors, open steel frame) built in 1952 for $18,000. Tank for flammable liquid fires, no fire test building. Classroom facilities seat 60.

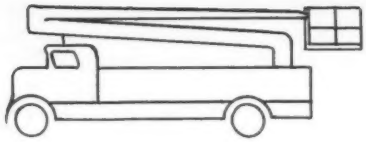


Fig. 1. Articulated boom, rear mount.

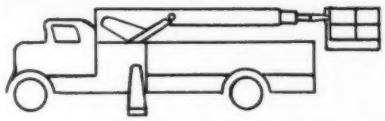


Fig. 2. Telescopic boom, midship mount.

ELEVATING PLATFORM APPARATUS

From a pamphlet prepared by the NFPA Committee on Fire Department Equipment

A NUMBER of fire departments have expressed interest in elevating or aerial platform equipment for fire fighting and rescue purposes. Only limited experience in the fire service is available to determine those design features which are desirable or undesirable. Therefore, this informative pamphlet has been prepared as a guide for the thinking of those municipal officials considering the purchase of elevating platforms. The NFPA Committee on Fire Department Equipment will be interested in all comments and suggestions of value in the eventual preparation of a definitive performance standard for elevating platforms.

This type of apparatus being offered to the fire service consists of hydraulically-operated booms of either telescopic or articulated design, each having a work platform at the top. Controls for the boom are provided both at the base and at the platform. This feature is novel in fire fighting equipment in that the man on the platform can effect the exact placement of the platform within the operating limits predetermined by the equipment design and the location of the vehicle.

An elevating platform is essentially an addition to a fire department vehicle and should not be considered, based on present experience, as a "cure-all" or a replacement for complete lack of needed apparatus of presently recognized types. On this basis, the vehicle and its components should, insofar as possible, comply with the present provisions of NFPA No. 19, Specifications for Motor Fire Apparatus, as explained in the Introduction. For example, an elevating platform may be mounted on a pumper in which case the specifications should require compliance with Chapters 1, 2, 3, 4, 5, 6, 7 and applicable sections of Chapter 9, as well as information in this pamphlet.

The elevating platform equipment must be mounted on a fire truck vehicle capable of meeting the demanding requirements of the fire fighting service and operating efficiently in all kinds of weather.

The mounting of the elevating platform equipment may vary with the type of unit selected. With the articulated boom type the platform is generally mounted with the base approximately over the rear wheels and the boom extending forward. The platform when lowered is at the rear of the vehicle. (See Fig. 1.) With the telescopic type of boom, the base of the boom may be behind the cab and between the front and rear wheels of the vehicle, very similar to the mounting of a service type fire department aerial ladder. In this case the boom extends to the rear with the platform extending above and beyond the rear of the truck when the boom is retracted. (See Fig. 2.)

Some fire departments operate elevating platform apparatus as separate units or companies similar to the old water towers. Other departments have them mounted on a pumper or a service ladder truck which has other fire fighting functions. Where the elevating platform is mounted on a piece of apparatus having other major functions, the user must decide, as in the case of all combination apparatus, whether this will seriously restrict the utility of the vehicle. For example, if the elevating platform is mounted on a pumping engine, the use of the platform may be curtailed by the need for placing the pump at a hydrant and the space occupied by the boom may restrict the carrying and laying of hose. When elevating platforms are mounted on pumpers, a separate engine or other arrangement is necessary to operate the elevating platform to minimize any interference with pumping operations.

If the apparatus must be shared by other municipal departments for such purposes as servicing street lights, municipal signals and tree trimming, it should not be considered as fire apparatus in service.

Elevating platforms are sometimes compared with fire department aerial ladders because they have some functions and uses in common. Both may be used for rescue from upper floors and for water tower service. The aerial ladder provides a continuous path from the turntable platform to the place where access is required. The elevating platform serves as a portable elevator rather than as a direct access route.

Elevating platform units are made to reach from 65 to 85 feet when fully extended at their maximum elevation. Small units are available for use by utility crews but are not recommended for fire fighting because they may lack reach and load-carrying ability needed for fire fighting and rescue operations. In view of the fact that there is available a selection of types and sizes of elevating platform equipment, the prospective user should consider carefully the use and conditions under which the apparatus may be expected to operate. In general, it may be assumed that the fire department will be concerned first with the unit's potential as an elevated base for a large nozzle to be employed in water tower service, and, secondly, as a means of rescue from upper floors.

Some other useful functions are: as a portable elevator for transportation of fire fighting personnel, use by supervisory personnel or chief officers as a base from which to oversee or carry out a reconnaissance, and a platform for elevating floodlights above an emergency situation. Experience in the fire service may develop additional useful functions.

The use of the elevating platform as a water tower and rescue unit should be considered as two separate operations when evaluating the size and type of unit that may be needed. Important considerations, in addition to basic reliability, stability and load carrying

capacity, will be the vertical and horizontal distances which can be reached by the platform and the time required to make a complete round trip to rescue and discharge passengers.

With some models the horizontal distance which can be reached by the platform from the side of the truck is restricted, raising the question as to whether the truck can be spotted effectively for rescue work. Manufacturers should be asked to supply charts showing both recommended safe loading and the reach of their apparatus at all angles from horizontal to maximum extension. (See Figs. 3 and 4.)

It should be noted that the articulated boom design, when in use, requires overhead clearance on the side of the apparatus opposite the platform. For example, this might somewhat limit the use of the platform where there were overhead wires (such as trolley bus wires) in the center of the street.

For many years conventional water tower apparatus has consisted of a portable standpipe or mast equipped with a large riser and a large capacity nozzle. Water towers were built to extend nozzles to various heights; an elevation of 65 feet was most common although some 75-foot towers have seen service. Because of their limited use, water towers have been largely replaced by ladder pipes on aerial ladder trucks.

The elevating platform, on account of its mobility and capability of mounting a heavy stream nozzle, constitutes an excellent water tower. To provide this service, the elevating platform apparatus should be equipped with a permanent heavy stream nozzle arranged to discharge from the elevating platform and equipped with both straight stream and spray nozzle tips. Supply to the nozzle should be through piping of at least 3-inch internal diameter, installed with a minimum of bends or elbows, supplied through a permanently connected 3-way siamese with gates or valves.

Elevating platform apparatus have outrigger jacks which must be set to provide adequate stability for all operations. Consideration must be given as to whether these jacks will limit the use of the apparatus in alleyways and narrow streets. (See Fig. 5.)

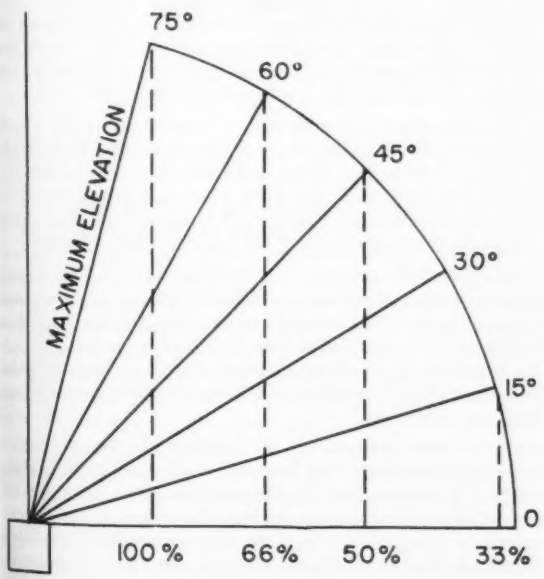


Fig. 3. Per cent of maximum load at full extension of typical telescopic boom.

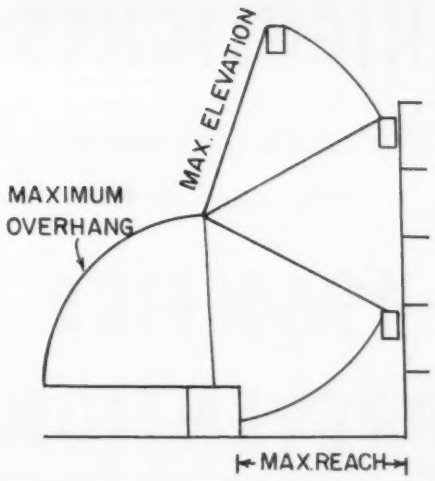


Fig. 4. Schematic diagram of maximum horizontal and vertical reach articulated boom (not to scale).

Another consideration is that the apparatus must be such that the platform can be operated with the vehicle located on a slope or hillside, either up or down grade without seriously restricting the sphere of use.

It is pointed out that provision of a means of escape from the platform in an emergency is desirable.

It is essential that the design be such that the platform can be locked in position in the event of power failure or of a break in the hydraulic system. Manual controls should be provided for emergency operation.

The platform should be large enough to accommodate several persons without interfering with the operator; it would appear that a desirable size is 30 inches by 60 inches with a pay-load capacity of 1,000 pounds. The platform should be equipped with sides or rails and a gate or other access means to allow persons to easily step from a window or roof onto the platform.

Consideration should also be given to the "pay load" that can be handled under fire ground conditions and at various extensions including winter operation.

It will be important to have spotlights mounted on the platform that the operator can direct to assist in rescue and fire fighting. There should also be powerful lights on the truck which will illuminate the area where the boom is working.

Some reliable form of communication between the operator on the platform and the ground level is essential. With the high noise level experienced on the fire ground, verbal orders may not be heard unless either a radio or telephone unit is provided.

Operators of this type of apparatus must be thoroughly trained. Whenever the equipment is used at a fire there must not only be an operator on the platform, but also an operator standing by at the base of the boom. The controls at the base should override the controls at the platform.

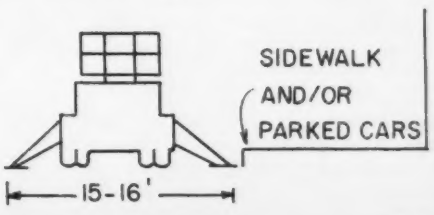


Fig. 5. Space needed to set ground jacks.

HIGHLIGHTS

of municipal entries submitted to the

1960 FIRE PREVENTION CONTEST

Part II

AS MENTIONED last month, the 1960 Fire Prevention Contest brought one of the highest totals of entries in many years. Martinsville, Virginia, and Hamilton, Ontario, were the Grand Award winners in the Municipal Division, for which 813 entries were submitted from the United States and Canada. Of the other entries, 113 were submitted in the Industrial Division, 422 in the Government Division, and there were 5 special entries. A booklet containing complete Contest results may be obtained by writing the NFPA Public Relations Department.

It is not possible in limited pages to give an adequate summary of the many worthwhile activities reported in the many volumes sent to the contest. It is clear to anyone who examines these entries, however, that the fire service is making tremendous strides in educating the public in fire safety and in enforcing existing fire protection regulations.

The most noticeable activities for the past year were fire department inspection programs (industrial, mercantile, and dwelling), cooperation between fire departments and industry (pre-fire planning and "plant orientation"), and fire safety education for the youngsters (baby-sitter training, Scout activities, and Sparky Fire Department). Many fire departments show a great deal of imagination and initiative in presenting their messages to the public and in aiming for, and reaching, certain objectives.

On these pages are brief descriptions of activities reported in entries selected at random from the U.S. Municipal group. This is just a condensation of about a *one per cent* sampling of all the entries, but it shows how some municipalities are working on the continual problem of fire prevention.

CEDAR RAPIDS, IOWA . . . Jesse G. Hunter, Chief; Assistant Chief R. H. Ellison, Director of Fire Prevention. Five members assigned to fire prevention. . . . During the past year the chief sent letters to property owners expressing regret at their fire loss; included questionnaires asking for opinions of firemen's handling of emergency.

PORTLAND, MAINE . . . Carl P. Johnson, Chief; Haswell N. Bruns, Chief of Fire Prevention Bureau. Six people assigned to fire prevention. . . . New Sparky car helped promote fire prevention among school children, while 370,440 milk cartons brought "Sparky" message "Stop Fires — Save Lives" to residents of Greater Portland during Fire Prevention Week. Amusing CUPUFU Bird was used to excellent effect in newspaper and TV ads during Spring Clean-Up Week to encourage citizens to "clean up, paint up, fix up."

MERCED, CALIFORNIA . . . George Coolures, Chief. Assistant Chief Paul R. Nordell and three other men assigned to fire prevention activities. . . . Theatre tickets were given to 1,100 children who brought a load of trash from their homes during Spring Clean-Up Week. A total of 5,000 pounds of trash was collected. To cut down electrical fire hazards in the city, warning stickers were placed in every residential fuse box.

MIAMI, FLORIDA . . . N. K. Wheeler, Chief; Captain Dewey Yates, Fire Marshal in charge of fire prevention. Sixteen men assigned to fire prevention. . . . Boat owners received fire safety instructions and materials from fire department personnel; fire hazards were demonstrated and fire prevention materials passed out at Home Show.

LOUISVILLE, KENTUCKY . . . Colonel John H. Krusenklaus, Chief; Major Merle Brown, City Fire Marshal, Fire Prevention Bureau. Eighteen people assigned to fire prevention. . . . Hospital and institutional personnel training programs were conducted by members of the Fire Prevention Bureau throughout the year. Louisville Council of Churches participated in distribution of invalid markers.

FORT WORTH, TEXAS . . . Paul C. Fontaine, Chief; C. C. Killian, Fire Marshal; Luther E. Koch, Director of Fire Safety Education. Four people assigned to fire prevention. . . . Radio stations cooperated with fire department by conducting Fire Prevention Week Slogan Contest, while TV stations ran a poster contest. New residents received "Welcome, Newcomers" letters, including a useful "Check List for Your Fire Safety" pamphlet.

NASHVILLE, TENNESSEE . . . John D. Ragsdale, Chief; Dan C. Hicks, Fire Marshal. Ten persons assigned to fire prevention. . . . Training sessions on fire safety were conducted for school custodians. Continuing its emphasis on school safety, the fire department distributed a check list to principals regarding inspection of school property, fire alarms and fire fighting equipment available for schools.

STEVENS POINT, WISCONSIN . . . Carl Maslowski, Chief, Fire Prevention Bureau. . . . A list of 165 students satisfactorily completing Baby Sitters' Clinic sponsored by Stevens Point Junior Woman's Club in conjunction with Stevens Point Committee for Fire Prevention, was made available to parents looking for qualified baby sitters.

WAUSAU, WISCONSIN . . . W. G. Petzold, Chief . . . imaginative contest entry was in form of file cards in wooden filing cabinet. . . . Last year, the city adopted National Fire Codes; distributed NFPA Fire Prevention Calendar. During Fire Prevention Week a mirror was placed inside "Talking Alarm Box," which bore the sign, "Open door and see best fire preventer."

FAIRBANKS, ALASKA . . . Franklin J. Jensen, Chief; Ronald A. Hendrie, Fire Marshal in charge of fire prevention. . . . Alaska Fire Equipment Company brought fire prevention rules to the children by distributing Sparky rulers and pens to schools. Fire department distributed lists of poisons and their antidotes to the citizens of Fairbanks. During Spring Clean-Up Week, more than 500 organizations worked on "Operation Face Lift," a city-wide clean-up paint-up campaign.

PALOS HEIGHTS, ILLINOIS . . . Edward Kamper, Chief; Lieutenant Roger Bushee, in charge of fire prevention. Fifteen men assigned to fire prevention. . . . Junior firemen, trained to fight small fires, learned use of equipment, fire prevention, and how to inspect homes for fire hazards. Airplane drop marked beginning of Fire Prevention Week. Fire Prevention leaflets marked "candy" entitled bearer to a candy bar when the leaflet was returned to the fire house. Another timely feature of the Week was the exhibition of fallout shelters.

EVENDALE, OHIO . . . Virgil E. Botiller, Chief; Assistant Chief Clarence R. Puckett, in charge of fire prevention. . . . During 4th Annual Industrial Mutual Aid and Disaster Control Conference, mock disaster was held at General Electric Company to show extent of mutual aid between the fire department, industry and other municipal agencies. In the area of youth education, the fire department taught fire prevention to deaf children, who compiled large posters and a story for Fire Prevention Week; The Ford Company gave each school in the city a plywood "Sparky."

HARTFORD, CONNECTICUT . . . Thomas F. Lee, Chief; George F. Kennedy, Fire Prevention Chief and Fire Marshal. Eight men assigned to fire prevention. . . . Push-button safety quiz highlighted Fire Prevention Week, and over 32,000 children attended free Fire Prevention Kiddies Review presented by Channel 30. A fire prevention seminar drew 125 participants, while "Fire Safety Saves" was stencilled on all main crosswalks. Institutions and business also supported the fire safety campaign. Employees at St. Francis Hospital competed in a poster contest. Hartford Electric Light Co. distributed 102,000 flyers on fire prevention to customers in the monthly bills, and, during Spring Clean-Up Week, the Fuller Brush Co. donated 25,000 litter bags for distribution to drivers. One of industry's contributions to fire protection — the Hartford Gas Co. held a demonstration "Sprinkler and Foam Fire Protection Systems for Fuel Storage Tanks."

PROVIDENCE, RHODE ISLAND . . . Lewis A. Marshall, Chief; Battalion Chief John E. Butler, Jr., in charge of fire prevention. Eleven other men are assigned to fire prevention. . . . About 15,000 children of first 3 grades were made members of the Junior Fire Prevention Corps of the Providence Fire Department, sponsored by a Sears-Roebuck Foundation $2,500 grant. Children received badges, membership cards and portfolios. Rhode Island Hospital of Providence held annual demonstration of skills of its trained emergency organization, with fire department giving full cooperation. Press, radio and TV give wide coverage on fire safety during holiday seasons. No home fires from Christmas trees or decorations reported for many years.

BALTIMORE, MARYLAND . . . John J. Killen, Chief; Battalion Chief Michael W. Horan heads the Fire Prevention Bureau, which includes 29 officers and men. . . . Last year, Baltimore amended its Fire Prevention Code and conducted intensive in-service inspections. In December, Engines 4 and 45 presented attractive Christmas gardens which drew more than 93,000 visitors. Sparky billboards were used around Baltimore to good effect. A fire safety program for all churches and synagogues in the city has also been developed.

MILWAUKEE, WISCONSIN . . . Edward B. McCabe, Chief; Deputy Chief Herbert J. Gurn and 28 men assigned to fire prevention. . . . Milwaukee's entry was presented within a wooden ballot box bearing the slogan "Vote for Fire Safety," and the city ranked high for its intensive inspection programs. Fire prevention emphasis has been placed on child training, with much work being done with "Sparky." The fire department worked with Boy Scout groups and with children at St. John's School for the Deaf.

SILVER SPRING, MARYLAND . . . Nelson Thayer, Chief; J. Livingston, Fire Marshal. . . . For a number of years Silver Spring has been carrying on excellent dwelling inspection and invalid marker programs. This year, the city gave much attention to the children, starting Junior Firemen programs and baby-sitter courses. To mark the end of the Christmas season, the fire department held a Christmas tree bonfire.

CHATTANOOGA, TENNESSEE . . . R. R. Gouldy, Chief; Mike Quinn, Fire Marshal. . . . This city conducted an intensive campaign to educate the public in the use of safe UL approved cans for flammable liquids instead of dangerous glass jugs. Chattanooga merchants sold out their complete supply of UL approved containers. School fire exit drills during the year involved 20,000 students.

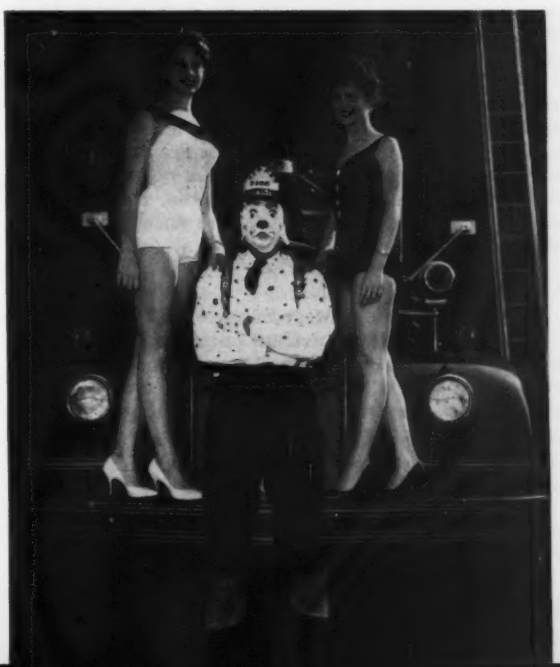
SALT LAKE CITY, UTAH . . . Albert Thompson, Chief. Assistant Chief W. J. Smith, a captain, a lieutenant and two inspectors are assigned to fire prevention. . . . The inspectors visit every industrial plant in the city twice a year. Other fire prevention activity includes pre-fire planning for all target hazards. In the area of child safety, all bicycles are licensed and inspected at fire stations.

FALL RIVER, MASSACHUSETTS . . . Francis J. McDonald, Chief. . . . Last year, Fall River formed a 20-man Mayor's Fire Prevention Committee and adopted a new Fire Code. Fire department made special LP record, used with piped music in numerous garment shops. Fiberglass rescue boat and sled drew attention to fire department activities.

OCEAN SIDE, CALIFORNIA . . . John T. Billing, Chief. . . . Credited with the best (or worst) pun featured in an entry: "As the electrician said to his daughter when she came home at 3 A.M. 'Wire you insulate?' "

The Marines Use Sparky!

Chief Thomas Peck, who commands the Fire Department of the Marine Corps Recruit Depot in Parris Island, South Carolina, for some time has made excellent use of Sparky's Fire Department. Some 600 to 700 youngsters have been enrolled, and the fire department makes extensive use of the Sparky mask and costume shown on a member of the department in this picture. Your attention may be distracted somewhat by the two individuals beside him, who are entrants in the Miss Fire Prevention Contest of 1961 at the Depot. They merely bring to mind the saying "Anatomy is something that everyone has — but it looks better on girls!"



MAKING A GOOD JOB OF IT

LIMITATIONS OF SMALL LINES

by Warren Y. Kimball

ONE subject good for prolonged discussion by fire officers is the relative merits of 1½-inch versus 2½-inch hand lines and the merits of high and low pressure booster lines as compared with 1½-inch lines. Some officers are known as "inch and a half men" because of the reliance they place on this size of attack line. Others are known equally well for the command "Give me a big line!"

There was a time a few years ago when some chiefs restricted or forbade the use of 1½-inch hose because they felt that too much reliance might be placed on small lines which might allow fires to get out of control. Others allowed use of 1½-inch lines only for wet-down and overhauling.

Today, 1½-inch hose is a standard fire fighting attack weapon. However, the fire officer still has the problem of determining when and where to use these smaller lines.

One fundamental fact should be kept in mind. No matter how much more effective the 1½-inch hose may be than the old "booster" (¾-inch or 1-inch hose), it is still a small line. It should always be backed up "automatically" by a big line, if water is available to supply adequate flow from a big line.

The 1½-inch hose, properly employed, is a powerful, fast attack weapon. It has much greater extinguishing capacity than a booster line and takes about the same manpower to operate. In fire fighting capability it has an advantage over the booster line that may be compared with the advantage of an automatic rifle over an old "Springfield," but it does not have the fire power of a 2½-inch line. The fire officer must know the capabilities of these attack lines and make the selection that will be the most effective.

From a fire fighting point of view, we are concerned with the extinguishing capacity and the reach of hose streams. Each stream must have sufficient cooling capacity to deal with the heat of the fire at the position to which it is assigned. This is true regardless of the design of the nozzle. In other words, if 100 gpm is needed at a certain point, a 30 gpm nozzle will not do the job.

Comparative Discharge

If we compare our weapons, ¾- or 1-inch booster hose will supply the equivalent of circular nozzle openings of 3/16- or ¼-inch diameter. The cross sectional area of a 3/16-inch opening is 0.02761 square inches; that of a ¼-inch opening is 0.04909 square inches. The flow would be equal to $29.7 \times d^2 \times \sqrt{NP}$. For a 3/16-inch opening, d^2 would be 1.044252 or 1.05. For a ¼-inch opening, d^2 would be 1.84425 or 1.85.

If the 3/16-inch tip is discharging as a solid stream at a pressure of 50 pounds, the flow will be 1.05 x 7.07 or 7.4 gpm. If it is discharging as fog at 100 pounds, the flow will be 1.05 x 10 or 10.5 gpm. If it is discharging as high pressure fog at 400 pounds, the flow will be 1.05 x 20 or 21 gpm. If it is discharging as fog at 625 pounds, the flow will be 1.05 x 25 or 26¼ gpm.

With the nozzle tip having an opening or openings equivalent to a ¼-inch circular opening (0.04909 square inch area), we have at 50 pounds nozzle pressure 1.85 x 7.07 or 13.2 gpm. If the nozzle is discharging fog at 100 pounds, the flow will be 1.85 x 10 or 18.5 gpm. If the nozzle pressure (not the pump pressure) is 256 pounds, the gpm will be increased to nearly 30 gallons (1.85 x 16 = 29.6).

There are certain sizes of nozzles that can be supplied efficiently by hose of 1½-inch diameter. These are nozzles having a total orifice area approximating the following circular orifices.

Diameter	Area	Flow
3/8 in.	(.11045 sq. in.)	$29.7 \times d^2 \times \sqrt{NP} = 4.2\sqrt{NP}$
½ in.	(.19635 sq. in.)	" " " $= 7.4\sqrt{NP}$
5/8 in.	(.30680 sq. in.)	" " " $= 11.6\sqrt{NP}$
¾ in.	(.44179 sq. in.)	" " " $= 16.7\sqrt{NP}$

From the above we find the following flows:

Nozzle Orifice Diameter Inches	3/8	½	5/8	¾
Product of $29.7 \times d^2$	4.2	7.4	11.6	16.7

Nozzle Pressure, psi	$\sqrt{NP}$	Gallons Per Minute from 1½-Inch Hose			
50	7.07	29.7	52.0	82	118
75	8.6603	36.3	61.0	101	144
100	10.0	42.0	74.2	116	167
125	11.1803	46.8	83.0	130	186

It is easy to see visually that, at any given nozzle pressure, the orifices employed with 1½-inch hose will flow a much greater volume in a given time at a stated pressure than the smaller orifices used with booster hose, even when the latter is used at high pressure. For example, take a 3/16-inch orifice on a ¾-inch line from a high pressure pump. Let us assume that we have 800 pounds at the pump. After deducting pressure loss in the hose, a pressure of 625 pounds is available at the nozzle. The "factor" for a 3/16-inch tip is 1.05 which is the result of $29.7 \times d^2$. The square root of 625 = 25. The flow at 625 pounds will be 1.05 x 25 or 26.25 gpm. This is 2½ times the flow from the same nozzle at 100 pounds. However, at only 50 pounds nozzle pressure on a ½-inch tip on a 1½-inch line, the flow is 52 gpm or twice as great and the extinguishing capacity is at least twice as great, assuming that the lines are used with equal skill.

In the case of the ½-inch tip at 50 pounds, the square root of nozzle pressure is only 7.07 as compared with 25 for the 625 pound stream but the factor obtained from 29.7 x d^2 is 7.4 as compared with 1.05 or seven times greater.

Furthermore, no special high pressure pumps or hose are needed to operate at conventional pressures up to 250 pounds at the pump and 100 pounds or better at the nozzle. If we compared the water horsepower or the foot-pounds of engine power required to supply the 3/16-inch tip at 625 pounds and the ½-inch tip at 50, or even 100 pounds, we would find that much more energy is wasted on the extra high pressure that provides no additional extinguishing capacity. And with half the flow, the friction loss in the small hose is at least ten times greater.

Nozzle Characteristics

Some spray or fog nozzles do not feature a single circular solid stream orifice. There may be a number of jets which impinge to form a spray, or there may be a central baffle (as with the garden hose nozzle) for adjusting the pattern. However, the same general formula for finding flows at various pressures may still be used, although the coefficient of nozzle efficiency may vary somewhat. Suppose that, instead of a single ½-inch orifice having an area of 0.19635 square inches, we have an impinging jet nozzle with sixteen 1/8-inch openings, each having an area of .01227 square inches. This amounts to 16 x .01227 = 0.19632 or almost exactly the same area. Or there might be seven 3/16-inch openings each having an area of .02761 square inches. 7 x .02761 = 0.19327.

On the other hand, with the peripheral jet or "garden hose" type of nozzle the center stem or "umbrella" covers over part of the waterway. Thus the waterway size is that provided by the proximity of the baffle to the inside circumference of the nozzle opening. For example, if the nozzle opening is equivalent to 1½-inch diameter but the baffle covers an area of 1¼-inch diameter leaving 1/8-inch clear area around the waterway, the actual orifice area would be 1.7671 square inches minus 1.2272 square inches covered by the baffle, leaving a waterway of 0.5399 square inches. This provides an equivalent nozzle opening of about 0.85 inch diameter. In many adjustable nozzles of the older types, as the baffle moves to adjust the stream pattern the size of the waterway opening is increased or diminished. In such cases it usually is found that the nozzle is almost closed and flow is substantially reduced when the baffle is moved to form a straight stream pattern. With such nozzles, if volume is needed for cooling a fire, the nozzle should be in the spray setting that will provide the best reach and coverage for the job to be done.

1½-inch Hose *vs.* 2½-inch Hose

We can use the 1½-inch hose when it will provide:

1. sufficient cooling capacity
2. adequate reach of stream
3. needed maneuverability in confined spaces
4. ease of handling in overhauling when the main body of fire has been knocked down and the heat reduced.

Basically, the 1½-inch lines are useful where the lines are relatively short so that sufficient pressure can be maintained at the nozzles; where buildings are relatively small and contain only normal hazards, and where room areas are small. In large buildings, where hose lines may be 300 to 500 feet in length, the pressure loss in the hose may make effective streams difficult or impossible to obtain. Where there are large rooms and high ceilings, the streams from 1½-inch hose may not have the reach and penetration needed, and, if there is considerable fuel and heat in a single fire area, the 1½-inch lines may lack adequate cooling capacity.

Some observers have theorized that the deficiency in cooling capacity of 1½-inch lines can be offset by running additional lines. For example, at a fire which could be handled with three 2½-inch lines having 1⅛-inch nozzle tips, the same flow could be applied by nine or ten 1½-inch lines of 85–90 gpm each. The trouble is that it would be extremely difficult to deploy this number of small lines quickly and correctly on a first alarm and it would require almost twice the manpower; yet it is not unusual for a good fire department to get three or four big lines in service on a first alarm when needed.

The small lines are "wonderful" for a small fire in a small building but should be backed up with a big line. If the fire is in a structure having large fire areas (rooms of more than 500 or 600 square feet), it may be desirable to use one or more 1½-inch lines for fast initial attack to extinguish an incipient fire or hold a more serious fire in check, but it is a serious mistake to rely chiefly on small lines.

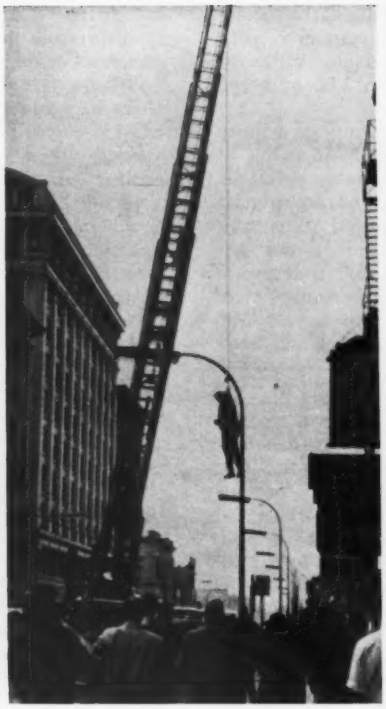
To further illustrate the point, in a hypothetical situation assume that a fire is generating 1,000,000 Btu (British thermal units) of heat a minute and that abnormal or excessive heat in the fire area amounts to 4,000,000 Btu when the first hose line is ready to operate. Assume that the 1½-inch line has a maximum cooling capacity of 680,000 Btu. After a minute of operation the fire is still generating heat faster than it is being cooled by the hose stream:

1,000,000 Btu
– 680,000
320,000 Btu added to fire area

Now we open up a 2½-inch line with a cooling capacity of 2,000,000 Btu per minute. In 30 seconds a noticeable gain has been made on the fire because in that time, even if not under attack, this fire would have generated only 500,000 Btu and the excessive heat would be reduced by 500,000 Btu. At the end of a minute the heat generation would have been substantially stopped and in two minutes the fire would be practically out.

A theory has been advanced that for maximum efficiency in application of hose streams, water spray should be applied at a rate of one gpm for each one cubic foot of space. Under this assumption, one 85 gpm fog nozzle should provide optimum extinguishing efficiency for a fire area approximately 25 by 35 feet with a 10-foot ceiling, or 20 by 30 feet in an area with a 14-foot ceiling. These are pretty large areas for control by a single 1½-inch line if a serious fire is under way. Under this assumption, if a five-room apartment in a multistory tenement building was fully involved, prompt extinguishment should be obtained by a single 1½-inch fog nozzle. However, experienced fire fighters know that if such a fire was experienced in a three- or four-story frame tenement, this would undoubtedly involve a second alarm assignment to protect lives, cover all essential positions and prevent extension of fire. On the other hand, if the same fire area involved a barn or shed of light construction where much of the heat could escape to the outside, a single 1½-inch line might be sufficient under favorable conditions to knock down the fire. In all such fire fighting situations there are a

(*Continued on page 34*)



UNUSUAL LADDER RESCUE

RECENTLY, the fire department in Indianapolis, Indiana, commanded by Chief Arnold W. Phillips, made the unusual rescue by aerial ladder shown in the pictures above. A man working on an advertising sign on top of the four-story building fell from the sign structure and suffered a possible fracture of the right foot.

The only entrance to the roof was through a trap door and scuttle hole measuring approximately 18 inches square. Since the only way to remove the man from the roof appeared to be through the scuttle hole and down a makeshift 10-foot perpendicular ladder, it was felt that some other type of rescue was necessary.

A call for assistance to the fire department brought response of Rescue Squad 7 and Aerial Ladder Truck 7. Members of the five-man Rescue Squad were directed by Captain Charles Commons, and the six-man Truck Company was under the command of Lieutenant George Mueller. First aid was given to the injured victim immediately. His foot was bandaged and splints were attached to his leg from the knee to the ankle.

The aerial ladder truck was then maneuvered to the position shown in the photo. The man was strapped into a parachute harness which was secured to the end of 150 feet of ¾-inch rope carried on the truck for rescue purposes. In addition, the end of the rope was secured around the victim with a "rescue tie." The other end of the rope was passed through a block which was secured to the top of the ladder, then down the ladder to the bottom, where it was fastened with two interlocking turns around the rung. Two members of the Ladder Company stood by to hold this end securely.

Another line was fastened around the victim and handled from the ground to control his path of movement.

The man was then lifted from the roof and lowered, not by releasing the rope, but by raising and lowering the fly of the ladder, which gave smoother control. When he reached the ground he was placed in a waiting ambulance and taken to a hospital.

This type of situation puts great demand on the skill of an aerial ladder operator and the judgment of his commanding officers, who must have an appreciation of the capabilities and *limitations* of the aerial ladder apparatus. Failure of the apparatus in any critical situation might mean severe injury to persons being rescued and fire fighters or bystanders in the vicinity; yet an aerial ladder operated properly within its limitations can be the quickest and most effective means of rescue.

As pointed out in the forthcoming NFPA Manual, *Operating Fire Department Aerial Ladders*, the 100-foot, 4-section Maxim aerial ladder is designed to support one man on the top section when the ladder is fully extended and raised to an angle of 60 to 80 degrees. At the 60 degree angle, the ladder has a horizontal reach of about 42 feet and a vertical reach of about 87 feet. At the 70 degree angle, the ladder has a horizontal reach of about 27 feet and a vertical reach of a little more than 95 feet. At the 80 degree angle the ladder has a horizontal reach of approximately 12 feet and a maximum vertical reach of 100 feet.

Many of the newer Maxim aerial ladders, particularly the 85- and 100-foot models, have a combined inclinometer and safe load and extension indicator. This shows the operator when the ladder is extended to the safe limit for the particular load. The operator must also consider such factors as the strength and direction of the wind and overhead wires or other obstructions which may interfere with movement or perhaps place an additional load on the ladder.

PUMP MAKERS FOR 75 YEARS

SHOWN on this page are four pieces of fire apparatus, manufactured years ago by the Waterous Company, St. Paul, Minnesota. The company, one of the major producers of fire pumping equipment, this year celebrated the 75th anniversary of its founding in St. Paul.

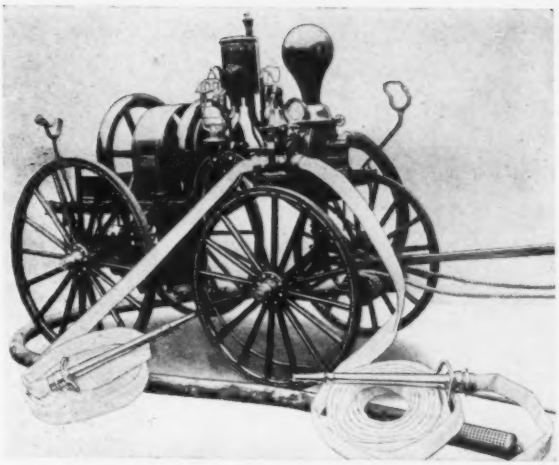
Actually, it started as a family organization in Brantford, Ontario, 117 years ago. In 1844, C. H. Waterous founded the Waterous Engine Works Company, Ltd., in that Canadian city, and the parent firm built many types of machinery needed for the territory at that time, including fire apparatus. The growth of this enterprise prompted the founder to send his twin sons, Frank J. and Fred L. Waterous, to Winnipeg to open a branch in 1881.

In 1886 the company expanded with a new plant in St. Paul. At the outset the new firm produced steam fire engines, ladder trucks and chemical engines, switching later to horse-drawn gasoline fire engines and motorized apparatus. (In 1917 the company moved to its present address, 80 East Fillmore Avenue.)

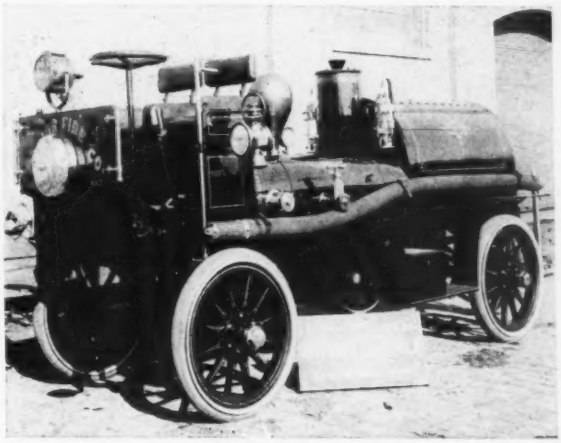
In 1886 Waterous produced its first steam pumper, and in 1898 the company introduced the first gasoline powered pumper (rig remained horse- or hand-drawn).

Eight years later the company developed self-propelled fire apparatus, a dual engine (one for pumping and one for propulsion) model which was sold to Wayne, Pennsylvania. New York City purchased its first self-propelled fire engine from the company in 1909. Other large cities such as Washington, D. C.; Richmond and Bridgeport also bought motorized equipment. The St. Paul company constructed the complete apparatus including motors, transmissions, rear axles, pumps, etc.

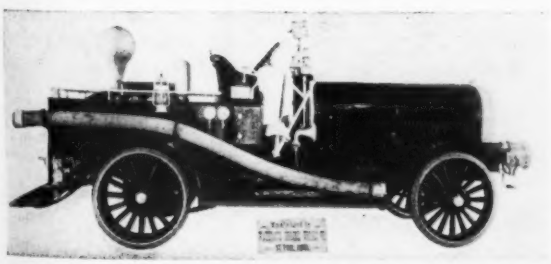
Fred A. Waterous, son of Frank J. Waterous, has been with the company since 1920 and has headed it since 1935. The firm now employs 135 persons in a modern, well-equipped plant covering more than 45,000 square feet.



First gasoline powered pumper introduced by company in 1898 featured a single-cylinder internal combustion engine. A blow torch heated a hollow platinum tube screwed into the combustion chamber of the engine. Compression forced the vaporized gas into the tube, the charge exploded and the flywheel carried the piston through the exhaust, intake and compression strokes. The engine was directly connected to a rotary gear pump, which pumped 300 gpm.



First attempt at motorizing a fire rig was made by company in 1906 when it installed a pump and engine on a motor truck. Although self-propelled, this model had two engines — one for propulsion and one for pumping. This machine was sold to Wayne, Pennsylvania.



In 1909 New York City purchased this self-propelled pumper. This model, similar to the one built for Alameda, pumped 900 gpm. In addition to an air starter, it had a hand crank some three feet long, plus a 2 to 1 reduction gear. Two men were required to turn it over.

Much developmental work and experimentation preceded introduction of this four-cylinder motorized pumper in 1907. A 600 gpm pumper, it was sold to Alameda, Calif.

Can you give "Yes" answers to all these

When you buy an M-S-A® Air or Oxygen Mask, with the new M-S-A® CLEARVUE* Facepiece and Demand Regulator, or the optional accessory, the AUDI-LARM, you can give positive "yes" answers to all these important questions about breathing equipment.

FACEPIECE

Q. Is lens easily replaceable in field without special tools?

Q. Does lens fastening device create the uniform tension that prevents loosening, pop-out, and leakage?

Q. Is the facepiece designed to prevent lens from fogging?

Q. Does the facepiece provide a means for mounting and adjusting prescription glasses inside the facepiece without affecting the seal?

Q. Is there a molded lip inside the facepiece to provide a comfortable leak-tight fit on a wide variety of faces?

Q. Does facepiece have a chin stop to eliminate improper positioning and wearing discomfort?

Q. Is exhalation valve well guarded from possible damage and yet readily replaceable?

Q. Is there a speaking diaphragm?

DEMAND REGULATOR

Q. Does admission valve have two-lever sensitivity (easily demonstrated) which provides large volumes of air with minimum breathing effort?

Q. Is filter of pressure-reducing valve efficient enough to prevent entry of extremely fine particles?

Q. Is high pressure side forged brass which offers optimum strength to withstand high pressure from cylinder?

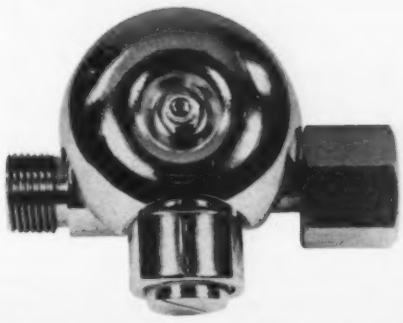
questions about Breathing Equipment?

Q. Is pressure relief valve mounted externally so that any excessive pressure vents safely to the atmosphere?

Q. Is diaphragm in regulator designed to serve as its own seal without using cement and a piece of string?

Q. Is by-pass valve flow internal rather than through a fragile piece of tubing mounted externally?

Q. Is hand-wheel on cylinder valve in an easily accessible horizontal position?



The AUDI-LARM (audible warning device) can be put on new or old apparatus without any special assembly or removal of parts.

MINE SAFETY APPLIANCES COMPANY
Pittsburgh 8, Pennsylvania

MSA

MSA Backs Up Its Label with Selection, Quality, Research, Experience

REGIONAL ROUND-UP

A spot check of progress and plans of NFPA member fire departments and other fire service organizations in various regions.

THINGS are moving in Tacoma. The fire department, under the command of Chief Harold C. Fisk, has obtained five acres of land, and construction has been started on a new training center. This will feature a 5-story drill tower with a "burning room," an auditorium and office building, a 5,000-gallon drafting pit and an area for fighting flammable liquid fires. The department recently received two new 1,000 gpm pumpers and a hose wagon built by the Crown Coach Corporation of Los Angeles. Manpower additions include ten new fire fighters, two additional fire prevention inspectors and a captain in the Training Division. The department has also purchased more than $12,000 in small equipment and fire hose.

All members have just finished a refresher course in First Aid and soon will take a radiological course given by an instructor from the Federal Civilian Defense school. The Training Division is burning old houses for fire company training purposes, working with the Urban Renewal program. Additional hydrants have been installed in the high value districts, and the city now has two hydrants on all downtown corners as well as in the center of the longest blocks.

Yakima will be host to the Third Annual Washington State Command School in May (*see below*). The fire department, commanded by Chief Pete Moore, is noted for its willingness to try new techniques. Examples: The department uses a 400-foot load of 4-inch hose as a supply line carried with regular 2½- and 1½-inch loads. (*More on this later* — Ed.) Study of technique for using this large hose was done by Assistant Chief W. R. Kuehn. Members of the department have also built a pair of "quads" on Diamond-T chassis. Being tried now are elastic chin straps which will hold helmets more securely when they are being worn over gas masks. Lieutenant Dick Landis, who has contributed feature articles for this magazine in the past, promises more information.

Six of these buildings were set up for training at a recent Conference in Washington. Fire fighters practiced "indirect attack," use of ventilation and protection of exposures.

Washington instructors working in Alaska included Assistant Chief Harold Thompson of Port Angeles, Chief Dwire Garrett of Sumner and Assistant Chief Hal Gardner of Bremerton. This was a demonstration of hose evolutions.

From Seattle comes word from Lyle Goodrich, State Supervisor of Fire Training, who reports that the Washington State Fire Service Command School will be held in Yakima, April 10–16. This relatively new training school (third year) is an exceptional "workshop" for fire officers. Typical of program content was Chief Stickney's talk on Arson Investigation and Fire Causes featured in this magazine last year.

The state training program also includes basic and advanced firemen's in-service training and an in-service Officers' Training Program. There are area schools as well as training at the Annual Firemen's and Fire Chiefs' Conference. The Training Division also conducts sessions for the state of Alaska, and three instructors completed a 21-day tour of Anchorage, Fairbanks, Seward, Ketchikan and Juneau, where they held four-day training courses (see photos).

The fire department in Lewiston, an Idaho city of 13,000 population, also serves an urban area of some 20,000 population. The city is the focal point for timber and agricultural towns within about a 75-mile radius. Chief Leonard B. Ellis reports that his department is soon to acquire a new 750 gpm pumper which is expected to form a nucleus of a second substation. For a long time the department

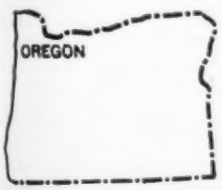
(Left) Alarm Desk Operator Jack Weidner mans new control center designed and built by members of the Lewiston Fire Department. It groups equipment previously located in several areas of the room. (Right) Lewiston fire fighters use "packsets" for in-service inspection.

has felt that another substation was needed to serve the growing population and outlying areas which are expected to develop as "slack water" navigation to Lewiston becomes a reality in the near future.

The Chief states that a modernization program started last year on two fronts. Firemen began relocating and replacing part of the 13 miles of wire on the fire alarm system. They also graded, graveled and fenced a drill field which includes a pit for flammable liquid fires and other training facilities. This year they hope to complete the wiring project, replace the last of the old interfering type alarm boxes with modern threefold types, and install a new Type B, Form 4 control panel to replace the present 40-year-old installation.

Since the headquarters station in City Hall provides no room for training, the new drill field adjacent to the present substation solves an old problem. Last year it was used for an exhibition of fire prevention and fire fighting techniques which drew favorable comment, and the fire department now hopes to make this exhibition an annual event. A drill tower with a concrete basement and first floor in which actual fire conditions may be simulated may be added this year.

Up to this year members of the department used to do all of their dwelling inspections on days off, but now are starting an in-service mercantile and home inspection program using new portable radio equipment and other mobile sets.



In our next issue we hope to tell you about the significant modernization program in Portland. The Fire Bureau in this "City of Roses" is in the middle of a $3,000,000 changeover. Program planning began about five years ago, after approval of a bond measure. Sample changes: complete overhaul of fire alarm system, nine new fire stations, new pumpers and aerial ladders. Also scheduled: more stations, more apparatus and overhaul of three fire boats.

A note from Eldon Winkley, Chief Deputy of State Fire Marshal V. Dean Musser, mentions the problems and activities of that office. New bills in the state legislature bear upon such items as: transportation of flammable liquid, fireworks for repelling predatory animals and birds, and an amendment to the Oregon State Conflagration Act.

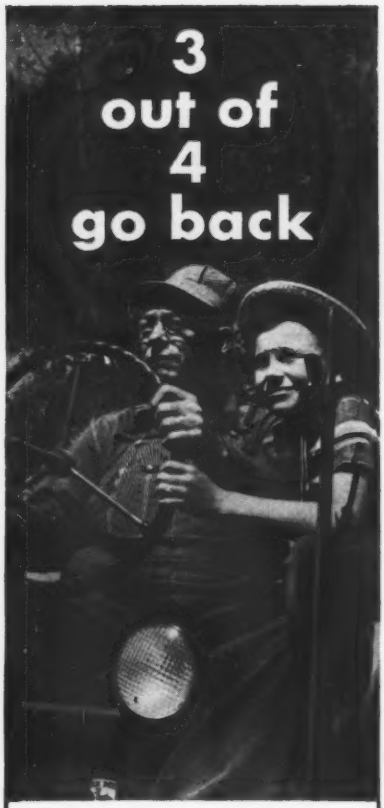
The Fire Marshal's Department plans to promote a complete updating of garage, dry cleaning and theater laws using NFPA standards as the basis for legislative bills. Also planned is sponsorship and intensified promotion of a state-wide home fire prevention program scheduled to start early in April and continue through the year. This is the eighth year in which the program has been conducted.

In Salem, the Four Corners Volunteer Fire Department is commanded by Chief W. C. "Ted" Miller. The Chief, impressed with recommendations of the tentative NFPA Standard No. 704M-T covering the hazards of material (see FIREMEN magazine for August 1960) has already made use of the color and numerical symbols. The bottom of the stationery issued by the department contains three squares (blue, red and yellow) and the symbol of radioactive material together with the numerical markings from 0 to 4 as mentioned in the tentative standard. For a little more than two years his department has been concentrating much training in the practice burning of buildings. The training paid off in a recent fire in a modern dwelling which had the attached garage and attic fully involved when first apparatus responded. Using preconnected lines and spray stream, fire fighters stopped the fire in its track with no water damage. Chief Miller is enthused about the realistic training and plans to continue such training wherever possible.

Concerning State firemen's training, Elmer H. Halstead, Director, Public Service Education, reports that an active program is planned by the Fire Services Committee. This includes members of fire service organizations and two representatives from the Division of Vocational Education. Weekend area schools are planned for Pendleton late in March and John Day early in April. An Area Flammable Liquids School will be held at North Bend about May. Coming up in June is the Annual Joint Conference of the Oregon Fire Chiefs' Association, the Volunteer Firemen's Association, and the Rural Directors' Association. The State Vocational Office furnishes speakers, movies, demonstrations and program information for county association meetings. Also scheduled is a Conference of Fire Department Training Officers at Corvallis late in March.

Half of Oregon, 30,000,000 acres, is classed as forest land, and about 14,000,000 acres of this area is under the protection of the State Forestry Department headed by State Forester D. L. Phipps. A note from Assistant State Forester James H. Walker in the Protection Division calls attention to the mobile fire weather forecasting unit developed by the department. It includes teletype, facsimile machine, and radio equipment installed in a truck. Supplementing this, three meteorologists (two Federal and one State) are on duty during the fire season and two during the winter months, which

(*Continued on page 25*)



Howard Hoyle had a heart attack. Here he is, with Grandson Tommy, back at his job.

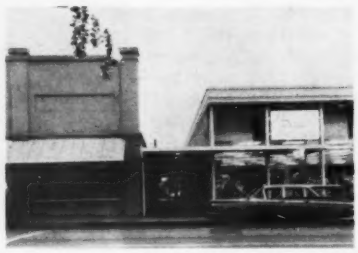
Most heart attack victims now recover. Three out of four who recover return to productive work because of improved techniques in diagnosis and treatment and better methods of rehabilitation.

Your Heart Fund dollars helped to make this possible.

For medical advice,
see your doctor.
For more information,
ask your Heart Association.
For greater advances against heart disease,

GIVE
to your
HEART FUND

Letter to FIREMEN



Views of shopping malls in Mountain View, California

Gentlemen:

There seems to be a growing problem for the fire service in shopping malls in the downtown areas and walkway malls from parking lots provided at the rear of a shopping area.

This problem came up in the City of Mountain View and I worked out the following solution. Perhaps this may be good information for your readers or anyone faced with the same problem.

Two years ago, the merchants in the City of Mountain View, California, decided to form a parking district in the downtown area. This covered three blocks, and the proposal was to install free parking in the rear of each one of these blocks. This would be six parking lots with a total of 700 free parking spaces. Besides this, on each lot there would be a ten-foot wide covered walkway from each lot to the street, and merchants would be allowed to build on either side of this walkway or mall with show windows and openings facing the mall. This would be a tremendous advantage to these merchants to be able to attract the pedestrians who would park in the lots and walk to the street.

The only real problem was that this area is in Fire Zone No. 1 and the openings in the malls would not be permitted according to code.

In studying a way to allow this without amending the code and setting any dangerous precedents, the Fire Department found that if the malls were covered by a sprinkler system and the merchants who would build on either side of the malls were to sprinkler their buildings completely, then these two stores and the mall could be considered as one occupancy and if they would not exceed 36,000 square feet total combined, then they would receive no penalty under a survey due to the exposed openings. In fact, they would aid under a grading due to the provision that awards five points credit for every two per cent of the high value area sprinklered.

The Fire Department then presented this to the City Council, along with the suggestion that the parking district install the valve pit and stand the cost of sprinklering the malls, at the same time running a line of sufficient size to the mall with a "T" to allow the stores constructed on either side of the mall to make a connect to this "T". This would eliminate cost of a pit and equipment to the developer and make it easier for him to sprinkler the building.

After a study of this proposal and a comparison of costs for sprinklered risks and unsprinklered risks, the Council decided this was not too much to ask the potential developers, rather than subject the City to possible penalty points under the grading schedule which could have an effect on the classification of the City. Also these merchants were able to attract the pedestrian traffic.

So the Council ruled that those who might intend to build on either side of these malls would have to sprinkler their buildings one hundred per cent and they also had the systems installed in the malls under the parking district contract, with the roofs of the malls to be of a noncombustible material.

These lots have just been completed and already two stores have been built alongside the malls and have been sprinklered to meet this requirement. The developers are both very happy with the requirement, particularly after finding out what the difference would be in their fire insurance and the fact that the systems amortize themselves in less than five years. In fact, they are enthusiastic about it and have agreed to talk to any future potential developers who may feel this restriction is too hard.

In addition to this, the City benefited in another way, as there were fifty-three sub-standard buildings removed to clear land for the parking lots.

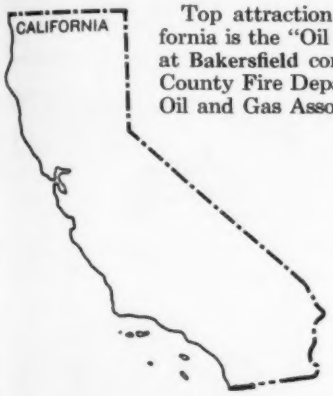
Yours truly,

Leslie K. Coon,
Fire Chief

Regional Round-Up

(*Continued from page 23*)

are principally given over to research. Despite the tremendous forest area in the state, average annual burn now is only about 14,000 acres.



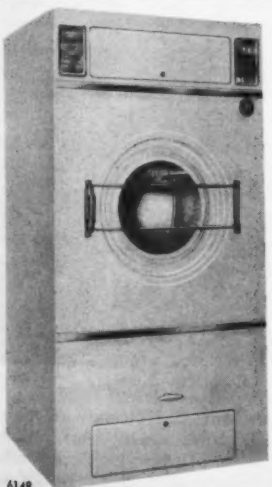
Top attraction this month in California is the "Oil Fire Control School" at Bakersfield conducted by the Kern County Fire Department and Western Oil and Gas Association. This school, an annual event, features classroom sessions and a good variety of practical training in the control of oil and LP-gas fire at the training grounds of the Standard Oil and Union Oil Company. State supervisor of Fire Training Thomas S. Ward also calls attention to the Annual Conference of the California Rural Fire Association in San Jose, April 29. Coming up later are the annual Fire Training Officers' Workshop in Fresno, May 15–19, the Eighth Annual Fire Investigators' Seminar at the University of California in Los Angeles, June 12–16 and a new fire prevention Seminar scheduled at the University of California in Berkeley, July 17–21 (*see Fire Training Dates column, page 30* — Ed.).

Chief Matthew Jiminez of the Hayward Fire Department, calls attention to a course in Municipal Fire Protection being conducted at Oakland City College. The second (Spring) semester is now under way with Captain Walter Nielsen and Lieutenant George W. Gray of the Oakland Fire Department as instructors. This is one of the required courses for an Associate of Arts degree in fire service training. It is sponsored by the Alameda County Association of Firemen and the Oakland Fire Department in cooperation with the college.

Chief Jiminez also reports that his own fire department has started a new training program under the direction of Captain William S. Wood. Training schedules are issued to all Company officers on a monthly basis and training is conducted from 1:30 to 3:30 P.M. daily at stations and at the drill tower. A new drill manual is being compiled to standardize training methods and operations. (*More on Hayward in a subsequent issue* — Ed.)

In Alameda, the fire department, headed by Chief William L. Hilbish, last year completed an interior paint job on its four fire stations in addition to other refurbishing. Thirty-one new water mains were laid in the city and eight hydrants were added to the 62 new hydrants installed the year before. As side line activities the department registers more than 5,000 bicycles each year, helps in voter registration and conducts an invalid marking program.

"NOW! A COMMERCIAL LAUNDRY DRYER THAT QUALIFIES . . . SETS A NEW HIGH STANDARD FOR THE INDUSTRY!"



Tumblette® by Cook

MODELS M3750 AND T3750 GAS DRYERS

Here is a dryer that is listed, tested and certified by fully accredited testing associations and laboratories — to meet the highest standards and strictest regulations. Available in coin-metered and timer-controlled models, with stainless steel or high gloss enamel finishes; has many outstanding safety features, including safety door. For full details and illustrated brochure, write manufacturer.

UL®
Tested, Inspected and Listed by Underwriters' Laboratories, Inc.

Certified by Canadian Standards Association Testing Laboratories

Tested and Certified by Canadian Gas Association

These certifications and/or listings are for fuel burning as well as electrical authorization. U. L. (natural and manufactured gas), CGA (natural and LP gas), CSA (natural and LP gas.)

6148

COOK MACHINERY CO., INC.
4301 S. FITZHUGH AVE. — DALLAS 10, TEXAS

WASHERS • EXTRACTORS • DRYERS

Fire Chief William M. Price

CHIEF William M. Price, who commanded the Idyllwild, California, Fire Protection District, died in a hospital in Riverside, California, recently. He had been Chief of Department for more than 13 years.

Assistant Chief William R. Bratton has been appointed new Chief of Department.

Chief Crusinberry Appointed

AFTER 27 years of service, Chief V. L. Crusinberry has retired as head of the Sioux Falls, South Dakota, Fire Department. However, to continue his work in the fire service, he has accepted an appointment as Director of Training for Firemen in the state of South Dakota. For a number of years he has been a member of the NFPA Committee on Fire Service Training and has participated in many fire service meetings.

NFPA ANNUAL CONVENTION

Statler Hilton Hotel
Detroit, Michigan

May 15-19, 1961

New Chief in Birmingham

ON JANUARY 1, Chief John L. Swindle assumed command as head of the fire department in Birmingham, Alabama. He succeeds Chief R. B. Knox who retired after 47 years of service.

Chief Swindle's career with the department dates back 23 years. He joined the department in 1938, became a lieutenant ten years later, then moved up to captain and deputy chief. He has always made top grade in every examination he has taken.

OCDM Appointment

President John F. Kennedy on January 23rd announced that Frank Burton Ellis of New Orleans would succeed Governor Leo C. Hoegh as director of the Office of Civil and Defense Mobilization. Mr. Ellis is a practicing attorney in New Orleans and also a member of the Louisiana Senate. President Kennedy asked that Senator Ellis give priority to a review of the structure and functions of OCDM.

NOW...Fyrepel offers you complete heat protection with the *all new*

9148 OVERHOOD

- Aluminized Glass Cloth
- 180° arc of vision
- Fits secure and snug

The 9148 snaps quickly and easily on to the brim of any fire helmet—gives excellent radiant heat protection to face, neck, chest and shoulders. Breathing apparatus can be worn beneath hood. The face piece, frame and drape are all detachable for easy part replacement.

Write for details on Fyrepel's complete line of fire fighting clothing and equipment.

FYREPEL PRODUCTS INC.
NEWARK, O.

SCHOOL FIRES

SEE IT—BELIEVE IT!

"OUR OBLIGATION"

This award winning new film is now available — a dramatic, powerful, and realistically filmed story depicting what could happen in a typical school and what you can do about it. *Our Obligation* should be seen by every citizen.

Bertha Landers, film review, commented, "A must for adult viewing."

Ellis A. Jarvis, Superintendent of the Los Angeles City Schools, says, "A dramatic presentation of a most important lesson for parents, teachers, administrators, and the responsible public."

This 26-minute sound film is on 16mm, in full color.

Purchase price is $185.00 per copy

Mail all inquiries and purchase orders to:

CINESOUND COMPANY
1037 No. La Brea Ave., Hollywood 38, Calif.
Phone: OL 4-3005

EVENTUALLY

YOU WILL TRY WET WATER...

WHY NOT START WITH

Stevens' Penetro-Wet?

THE SAFE WET WATER

Positive Rust Protection. Harmless to Packing. Prevents Flare-Back on Petroleum Spill Fires. It Foams.

WRITE TO US ABOUT OUR WET WATER PROPORTIONER.

S. G. STEVENS CO.
3859 LOCKWOOD AVENUE
TOLEDO 12, OHIO

FIRE SERVICE MEETINGS

MARCH

Alabama:
MARCH 20, 21: Alabama State Firemen's Association, Annual Convention, Fairhope. Contact B. E. Harris, secretary, Box 1542, University.

California:
MARCH 16: Monterey Bay Area Fire Chiefs' Association, The Palace, 7:30 P.M., Gonzales. Contact Walter Streuli, secretary, P.O. Box 243, Gonzales.

Colorado:
MARCH 16: Western Valley Firemen's Association, regular meeting, 7:00 P.M., Community Hall, East Orchard Mesa Fire Department. Contact Joe Brady, secretary, Fire Department, Grand Junction.

New York:
MARCH 16: Hudson-Mohawk Volunteer Firemen's Association, regular meeting. Contact W. J. Hopmeier, secretary, RD 5, Box 202, Schenectady.

Ohio:
MARCH 16: North Central Firemen's Association, regular meeting, 8:00 P.M., South Amherst. Contact Eugene B. Woods, secretary, 322 So. Main Street, Amherst.

Pennsylvania:
MARCH 18: Western Pennsylvania Firemen's Association, regular meeting, Westinghouse, East Pittsburgh. Contact Edward Clawson, secretary, 785 Fourth Avenue, New Kensington.

APRIL

Delaware:
APRIL 13: New Castle County Volunteer Firemen's Association, regular meeting, Aetna Hose Company, Newark. Contact Ed Hawthorne, secretary, Box 175, St. Georges.

Kansas:
APRIL 10–12: Kansas Inspectors' Association, Annual Meeting, Union Building, Kansas State University, Manhattan. Contact L. L. Binkley, secretary, 104 S. Main Street, Wichita 2.

New York:
APRIL 7: Broome County Firemen's Association, regular meeting, Vestal No. 1. Contact Glenn Fuller, secretary, Box 79, Port Crane.

APRIL 9: Northern Central New York Volunteer Firemen's Association, executive meeting, Port Byron. Contact Samuel J. Pitcher, secretary, 35 Dayton Street, Rochester 21.

APRIL 11: Sullivan County Volunteer Firemen's Association, regular meeting, Rock Hill Fire Department. Contact W. F. Harris, secretary, Pond Eddy.

APRIL 13: Mid-Hudson Harlem Valley Fire Chiefs' Association, monthly meeting, Mase Hook & Ladder, Beacon. Contact Dick Kennedy, secretary, Box 18, Glenham.

Ohio:
APRIL 6: Tri-County Volunteer Firemen's Association, regular meeting, Brilliant. Contact C. F. Luyster, secretary, Piedmont.

(*Continued on page 28*)

NIELSEN-RIONDA
BADGES

Superior Solid Backs

- Money Clips - All Badges - No Extra Charge
- 10 Year Guaranteed Hat & Coat Attachments
- Sta-Brite the Lifetime Metal

Write for Free 32-Page Catalog to Dept. F3

NIELSEN • RIONDA INC.
40 JOHN ST., NEW YORK 38, N. Y.

WHY
BUY CIVIL SERVICE MATERIAL
FROM THE
Davis Coaching School

- Saves Time
- It's Economical
- Has Best Material
- It's Up to Date

For complete information about Civil Service study material for your next promotional examination

Write:

Davis Coaching School
100 EDGEHILL WAY
SAN FRANCISCO 27, CALIF.

Fire Chiefs! GIVE ORDERS...Receive answers FAST with
"INSTANT 2-WAY RADIO CONTACT"

Saves Precious Seconds — Helps Prevent Emergencies

New 2-way radio actually fits into your pocket. Exclusive, rechargeable battery lasts year or more. Range—½ to 1 mile. No license required.

GLOBE ELECTRONICS
Pocketphone
THE FINEST 2-WAY RADIO AVAILABLE TODAY

Ideal for office, factory, stores, surveying, construction, sports, recreation, home. Finest quality available. Makes handy paging system. Use with Globe Electronics CB-100A or CB-200 for longer range systems. • Actual size — 1⅛" x 2⅛" x 6¼" • Weight – 13 oz. • High impact Cycolac case • All Transistorized. $125.00 each

FOR LONGER RANGE COMMUNICATION

CITIZENS BROADCASTER CB-100A... Complete 3-channel, 2-way station. Fixed or mobile installation. Easy to install, operate. Range 5-15 miles. $139.95 each

BROADCASTER DELUXE CB-200... A rugged transceiver for commercial use. Transmits on 5 channels. Receives on all 22. Adapts to selective calling system. $189.95 each

CLIP AND MAIL COUPON TODAY FOR INFORMATION

GLOBE ELECTRONICS
A Division of Textron Electronics, Inc.
22-30 So. 34th St., Council Bluffs, Iowa

Please send me complete information on the new Globe Electronics ☐ Pocketphone ☐ CB-100A ☐ CB-200

FM-3

NAME _____
ADDRESS _____
CITY _____ STATE _____

CAIRNS HELMETS

The manufacture of Fire Helmets has been our exclusive business for one hundred twenty-five years. Today we are the only manufacturer offering you your choice of helmets in leather, aluminum, or plastic — all of them veterans of fire service — all produced in our own modern factory — and all distinguished by those high standards of design, materials and craftsmanship for which the name CAIRNS stands throughout the fire-fighting world.

IN TOP-GRAIN LEATHER

No. 5A
The "NEW YORKER"
REGULATION

Three other models in leather available, in both regulation and drop brim styles.

IN ONE-PIECE ALUMINUM

No. 350
The "SENATOR"
REGULATION

Also available in aluminum, in streamlined drop brim patterns.

IN "FLINT-FLEX" PLASTIC

No. 900
The "CLIFTON"
REGULATION

Other approved styles, in plastic, are described in our catalog.

We can supply everything the fireman needs for his personal equipment — as well as Department Record Books and Secretary's Forms. Write for Catalog No. 360.

CAIRNS & BRO., Inc. — Allwood, Clifton, N. J.

SINCE 1836

Fire Service Meetings

(Continued from page 27)

APRIL 11: Summit County Firemen's Association, regular meeting, Coventry. Contact Harry Harris, secretary, 998 Kubler Street, Akron 12.

Oregon:

APRIL 12: Marion County Firemen's Association, regular meeting, Stayton. Contact Allan Foster, secretary, 507 McClaine Street, Silverton.

Pennsylvania:

APRIL 3: Adams County Volunteer Firemen's Association, quarterly meeting, Gettysburg Fire Company. Contact Donald C. Sneeringer, secretary, RD 4, Hanover.

APRIL 7: Fayette County Firemen's Association, regular meeting, 8:00 P.M., Connellsville. Contact Fred R. Gustafson, secretary, P.O. Box 126, Connellsville.

APRIL 14: Dauphin County Volunteer Firemen's Association, quarterly booster meeting, Fire Station, Highspire. Contact D. Edgar Fox, secretary, 723 N. 19th Street, Harrisburg.

APRIL 15: Western Pennsylvania Firemen's Association, regular meeting (Homeville), West Mifflin. Contact Edward Clawson, secretary, 785 Fourth Avenue, New Kensington.

Rhode Island:

APRIL 11: South County Fire Chiefs' & Wardens' Association, annual meeting. Contact Howard F. Briggs, Jr., Saunderstown.

Virginia:

APRIL 3: Harrisonburg Fire Department, Co. No. 1, regular meeting, 7:30 P.M., Meeting Hall, 56 Newman Avenue, Harrisonburg. Contact V. T. Life, secretary, Harrisonburg Fire Department Company No. 1.

Indiana Officers

HERBERT L. DWYER, chief instructor of the Indianapolis Fire Department, was re-elected president of the Indiana Certified Fire Instructors' Association during the Annual Fire Instructors' Training Course at Purdue University in Lafayette, Indiana.

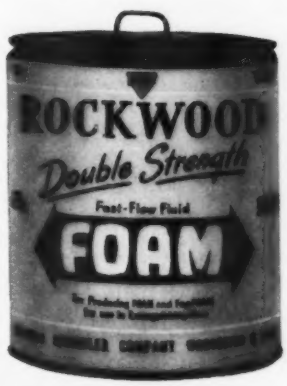
Other officers re-elected by the Association included Richard Templin, Muncie Fire Department, first vice-president; Carl Lederer, assistant chief, South Bend Fire Department, second vice-president; Charles L. Roblee, fire training specialist, Purdue Public Safety Institute, secretary; Peter Kuipers, Lafayette, treasurer; and Robert F. Hamm, Indiana Rating Bureau, Indianapolis, chaplain.

Two new members of the board of directors for the state association were elected for three-year terms. They are John Helmer, chief instructor, Evansville Fire Department, and James Baker, Greenfield Volunteer Fire Department.

"The best way to tell whether a man is having fun at your party is to catch a look at the expression on his wife's face." — Arthur Godfrey.

99.7%

of Rockwood FOAM protection is FREE!



ROCKWOOD SPRINKLER COMPANY

A Division of The Gamewell Company
A Subsidiary of E. W. Bliss Company

Engineers Water . . . to Cut Fire Losses

FOR FIRE FIGHTING purposes Rockwood Double Strength FOAM is inexpensive and completely effective. 3 parts *Rockwood Foam Liquid, plus 97 parts free water, plus 900 parts free air give you a fast low-cost fire extinguishing agent for only 1¼ cents a gallon!*

Rockwood Double Strength FOAM puts out fires fast . . . reduces your storage costs . . . reduces shipping costs too! If you're using other types of special hazard fire extinguishing agents — you may not be using the most economical or most effective agent! We'll show you how to save on training cost and on fire fighting costs — and to fight fires better! Send in the coupon below. Tested and listed by Underwriters' Laboratories, Inc. Distributors in all principal cities.

ROCKWOOD SPRINKLER COMPANY
Portable Fire Protection Department
429 Harlow Street, Worcester 5, Massachusetts

Please send me complete information on Rockwood fire-fighting products.

Name.....
Title.....
Company.....
Street.....
City.....*Zone*....*State*.....

SCOTCHLITE
BRAND
REFLECTIVE
FABRIC
LETS YOU SEE THE DIFFERENCE!
• 100 times brighter than white paint!
• Sets a new standard of safety!
• On hem, sleeves, and across back of shoulders!
• Scotchlite lettering also available!
STANDARD
SINCE 1901
GLOBE
MANUFACTURING COMPANY
PITTSFIELD, N.H.
FREE: Fully illustrated, 8 page catalog on the complete GLOBE fireman's suit and accessories line.

"RESCUE BREATHING" ©1958

the FIRST and ONLY SAFETY FILM

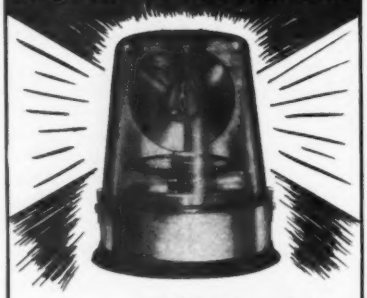
teaching the NEW methods of MOUTH-TO-MOUTH RESUSCITATION that...

- has been officially approved for purchase under the Federal Contributions Program.
- was officially approved and endorsed as a teaching film by the New York and American Societies of Anesthesiologists.
- has won THREE National film awards: the NATIONAL SAFETY FILM CONTEST, the EFLA BLUE RIBBON and the CHRIS AWARD.
- was produced under the technical supervision of the foremost MEDICAL authorities on the subject.

Running Time — 21½ Minutes
16mm Color Sound Print . . $200
16mm B&W Sound Print . . $110
25% Discount on 6 or More Prints
Now available in ENGLISH, FRENCH, SPANISH and PORTUGUESE versions. Please specify language version you wish to purchase.

Send Orders or Requests for Previews-for-Purchase to:
AMERICAN FILM PRODUCERS
Dept. RB-2
1600 Broadway, New York 19, N.Y. • PL 7-5915

MAGNA-VAC
Magnetic—Sticks Like Glue



New 360° Revolving WARNING LIGHT

SELLING LIKE HOT CAKES!
No one can believe the price!

What a light! Plugs into cigarette lighter. Holds like grim death. Six magnets. Silent motor. Revolving reflector. 60 powerful flashes a minute. Red, blue, or amber dome. Ideal for wreckers, service cars, ambulances, volunteer fire and police at a price they can afford. 7" tall, 5" dia.

ASK YOUR JOBBER OR WRITE US TODAY!
TRIPPE MFG. CO., Dept. FN
133 N. Jefferson St., Chicago 6, Ill.

Firemen's Training in the Months Ahead

Alabama: The 25th Annual State Fire College will be held April 10–14, on Northington Campus, University. A three-day Fire Prevention Conference will be held in August, and an Arson Investigation Conference is scheduled for October 30–November 3. Write W. L. Rickard, P. O. Box 2847, University.

Arkansas: An Instructors' Conference will be held at the State Capitol July 17–21. Two-week regional training schools will be conducted in 17 regions from March 20–November 30. For details write W. A. Turner, Education Building, State Capitol, Little Rock.

California: A Fire Training Officers' Workshop is scheduled for May 15–19 in Fresno. An Arson and Fire Investigation Seminar will be held June 12–16 at the University of California, Los Angeles, and a Fire Prevention Seminar is planned for July 17–21 at the University of California in Berkeley. For details write Thomas S. Ward, 721 Capitol Avenue, Sacramento 14.

Colorado: The Colorado State Firemen's Fire School and Tournament will be held June 21–24 in Salida. Contact E. W. Crawford, Head, Firemanship Training, Department of Education, 503 State Office Building, Denver 2.

Connecticut: The Connecticut State Fire College will be held June 5–9 at New Haven Fire Department training ground. For details, write Roy W. Adams, Director, Vocational Training Field Service, Connecticut State Department of Education, 490 Capitol Avenue, Hartford 15.

Delaware: The 13th Annual State Short Course will be held April 15–16 and April 22–23 at the Camden-Wyoming Fire Co. Write Emanuel J. Harkins, 1909 Newport Gap Pike, Cranston Heights, Wilmington.

Florida: Resident training classes will be conducted at Florida State Fire College each week in March, April 3–7, each week in September, and October 2–6. Other special classes and conferences to be held at the College include: Florida Fire Service Training Improvement Conference, January 10–13; Heating and Air Conditioning, June 5–9; Fire Pump Maintenance, June 19–23 (Seagrave Fire Pump) and June 26–30 (Hale Fire Pump); and Fire Alarm and Communication Systems, July 17–21. A Seminar in Arson Investigation and Detection will be held August 7–11 at the Cherry Plaza Hotel, Orlando. For details write W. H. Barnett, Superintendent, Florida State Fire College, P. O. Box 785, Ocala.

Georgia: The second Annual Arson School will be held April 3–7 at the Atlanta Fire Department Training Center, where the State Fire School will be conducted May 1–3. The state will also conduct several zone schools through the year in Douglas, Augusta, Albany and Savannah. For details write W. N. Ratcliff, Head of Georgia Fire Institute, Industrial Education Department, Georgia Institute of Technology, Atlanta.

Illinois: The 37th Annual Illinois Fire College will be held on the campus of the

University of Illinois, Urbana, June 12–15. Officers' Regional Training Schools will be conducted in Hillsboro, March 13–April 10; Park Ridge, April 18–May 16; and Park Forest, April 19–May 17. Advanced Firemanship Training Courses are planned for Grayslake, February 21–April 11; Danvers, March 8–April 12; St. Charles, April 3–May 8 and Aroma Park, April 6–May 11. For details write R. K. Newton, Director, Illinois Fire College, 116D Illini Hall, Champaign.

Indiana: The 8th Annual Industrial Fire Control Conference will be held at Purdue University on April 4–6. For information, write Professor Shelby Gallien, Seminar Director, Public Safety Institute, Purdue University, West Lafayette.

Iowa: Iowa State University will be the site of the Fire Department Instructors' Conference, April 18–21; the 37th Annual Iowa State Fire School, June 13–16, and the Annual Fire Department Inspectors' Short Course, August 1–4. For details write Keith Royer, Supervisor, Firemanship Training, c/o Engineering Extension, 110 Marston Hall, Iowa State University, Ames.

Kentucky: The Kentucky Fire School will be held at the University of Kentucky, June 12–14. For details write John L. Thompson, Director, 940 Starks Building, Louisville 2.

Maryland: The following short courses are scheduled at the Fire Service Extension Department, University of Maryland: Fire Inspectors' Short Course, April 4–7; Pump School Series (tentative), May 6, 7 (Waterous), May 20, 21 (Seagrave), May 27, 28 (American LaFrance), June 3, 4 (Hale), June 10, 11 (Barton-American); Hydraulics Short Course, July 10–12; Aerial Ladder Short Course, August 7–9; and 28th Annual Short Course for Firemen, September 5–8. For details write Robert C. Byrus, Box 85, College Park.

Michigan: The Michigan Fire College will be held June 20–23. The Arson Control Seminar will take place March 8–10, while the Michigan Fire Instructors' Conference is scheduled for April 25–27. A Fire Chiefs' Training Conference will be held April 6, 7 and an Industrial Fire Control Seminar, November 2, 3. Contact Francis A. Hartman, Supervisor Firemanship Training, Civil Defense and Disaster Training Center, North Campus, University of Michigan, Ann Arbor.

Minnesota: The State Fire School will be held April 24–27 on Farm School Campus, University of Minnesota. For details write Dr. J. O. Christianson, Director, St. Paul Campus, University of Minnesota, St. Paul 1.

Nebraska: The 24th Annual State Fire School will be held May 5–7 at Nebraska State Volunteer Firemen's Association and Civil Defence Training Center, Municipal Airport Grounds, Grand Island. For information write William A. Berens, Chief State Fire Engineering Instructor, Department of Vocational Education, P.O. Box 347, Harvard.

North Carolina: The State Fire College is scheduled for May 22–26. For details write Chief Charles L. Burkett, Fire Department Headquarters, Salisbury.

Ohio: The 7th Annual Central Western Firemen's Association Free Fire School will be held at West Alexandria, April 8 and 9. For details, write Chief W. H. Cheesman, 309 Briarcliff Road, Dayton 15.

The Franklin County Fire Association's third annual Regional Fire School will be held in Upper Arlington, May 20, 21. For details write Captain Samuel C. Martin, c/o Upper Arlington Fire Department, 2095 Arlington Avenue, Columbus 21.

Oklahoma: The Oklahoma State Fire School will be held April 17–21 at Oklahoma State University. For details write R. J. Douglas, Head, Fire Protection Department, Oklahoma State University, Stillwater.

Oregon: An Oil and Gas Fire School will be held April or May in North Bend. Write Elmer H. Halstead, Director, Public Service Education, Department Vocational Education, 105 State Library Bldg., Salem.

Saskatchewan: A Firemen's Training School will be held in Melville, April 4–6. For details contact A. I. Dron, Deputy Fire Commissioner, Office of the Fire Commissioner, Department of Labour, Administration Building, Regina.

South Carolina: Itinerant training classes will be held each week March through June, July 10–14, September 4–8 and 11–15. Write H. B. Wells, Instructor, Firefighter Training, "Shady Springs" Rt. 1, Prosperity.

Virginia: The Annual Pump Operators' School will be held April 22, 23 at Williamsburg Fire Department, Williamsburg.

The Staunton Fire School will be held July 24–28. Write R. Lawrence Oliver, Supervisor of School, State Department of Education, P. O. Box 654, Harrisonburg.

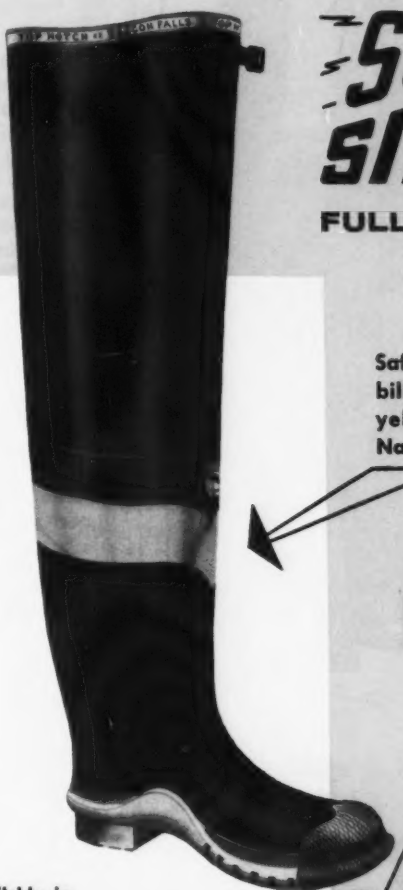
Washington: The Officers' Training Command School will be held in Yakima, April 10–14. For details, write Lyle Goodrich, Supervisor of Firemen Training, State Board for Vocational Education, 305 Marfran Building, 500 Aurora Avenue, Seattle 9.

West Virginia: The Tri-State Fire School Association will conduct its second Annual Watchmen's School, April 11 and its Fire School, August 21–25. For information write Captain R. M. Myers, secretary-treasurer, Tri-State Fire School Association, 816 9th Street, Huntington.

TOP NOTCH

SUPER SIREN

FULL PROTECTION FOR FIREMEN



Safety Stripe of high visibility yellow, the authentic yellow approved by the National Safety Council.

Built-in, puncture-resistant insole, tested to withstand 250 lbs. of pressure.

Plus more than 20 outstanding features that have earned Siren Boots nationwide recognition.

available in "SHORT" or "STORM KING" heights

CONSTRUCTED FOR FIREMEN
TESTED BY FIREMEN
PREFERRED BY FIREMEN

Write for a pamphlet illustrating our complete line of Top Notch Siren Boots

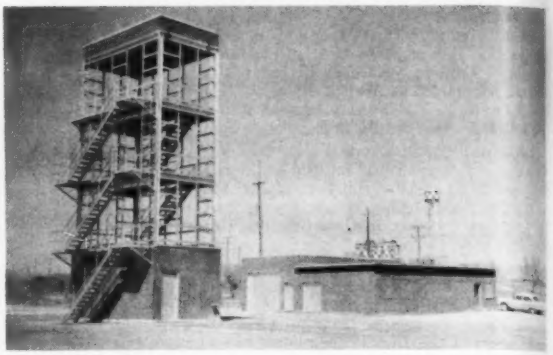
TOP NOTCH SIREN BEACON FALLS CONN.

exclusive products of
BEACON FALLS RUBBER FOOTWEAR • BEACON FALLS, CONNECTICUT

Darley Champion
750 Gallon Pumper
500 Gallon Tank
Because we make both Fire Pumps and Fire Apparatus, we can and do give you everything of the best and save you money, too.
W. S. DARLEY & CO.
Chicago 12

Fire Department Training Facilities

(*Continued from page 11*)



LUBBOCK, TEXAS. Population, 129,000; training area, 3 acres. Four-story steel, brick and concrete drill tower built in 1954 for $18,000. Pits for flammable liquid fires, no fire test building. Two classrooms seat 40 and 60 each.

tests can be conducted on pumping equipment; classroom facilities (in some places a large auditorium is used which can be divided into smaller classrooms); a maintenance and or storage shop where essential equipment can be repaired or stored; shower and toilet facilities and a watch room where telephone and radio communications can be maintained with headquarters in the event that companies or personnel undergoing training are needed for emergency response. It is also useful to have some area from which the general public or guests can observe demonstrations.

Each municipal fire department has its individual training problem and, accordingly, will build the training facilities that will be most suitable for its present and future needs.

Training Facilities Mentioned in Previous Issues of FIREMEN Magazine

City	Issue
Atlanta, Georgia	December, 1960
Baltimore, Maryland	July, 1957
Memphis, Tennessee	April, 1959
Rochester, New York	November, 1954
West Allis, Wisconsin	February, 1961
Williamsburg, Virginia	November, 1957

SPRINGFIELD, OHIO. Population, 83,000; training area, approximately 5 acres. Six-story, cinder block and wood frame drill tower built in 1952 for $2,500. Pits for flammable liquid fires, fire test building. Classroom facilities at headquarters seat 75.

Things sure have changed since the time when

NOTHING EVER HAPPENED

That *was* true in fire equipment . . . very little *did* happen . . . until Akron Brass applied engineering today to tomorrow's problems. The items below represent a substantial contribution to fire fighting . . . and we've introduced them in the past 3 years. Techniques have changed. Fire equipment has, too, for the better. Here's the proof:

IMPERIAL NOZZLES Style 715 constant gallonage, dual gallonage, fog and foam.

The fabulous **SPITZ-ALL NOZZLE** Style 910 that just won't clog up.

Style 1145 **BLACK WIDOW NOZZLES** to 2500 GPM. Light, powerful, constant gallonage.

Quick-Clamp electrical **REMOTE CONTROL LADDER PIPE** Style 666 reliable, effective.

Rugged, lightweight **HOSE CONTROL** Style 606 for 2½" or 3". Snaps on charged hose.

First balanced **PISTOL-GRIP NOZZLE** Style 708 better handling, less fatigue.

BYPASS EDUCTORS Style 2608 positive, easy-to-see metering, always ready for use.

Designed for fire service **UNI-FLOW VALVES** easy to operate, easy to service. Valves hold pressure or vacuum in either direction. Style 1482 Style 825 D

Style 80 **OILDRAULIC POWER EXPANDER** 2 operating units, hose tester. None faster.

Impinging jet **REVOLVING CELLAR NOZZLE** Style 538 greater coverage, better fog.

UNIVERSAL SUCTION SPANNER Style 19 extra leverage on 2½" to 6" couplings.

Style 585 **HOSE CLAMP** for emergency cutoff— strong, lightweight, dependable.

To stay up-to-date, specify: AKRON BRASS

AKRON BRASS MFG. CO., INC., WOOSTER, OHIO
AKRON MFG. (CANADA) LTD., AYLMER, ONTARIO

Write for your copy of the Akron Brass Catalog. Shows these and many other advanced fire fighting aids.

AKRON BRASS
FIRE FIGHTING EQUIPMENT

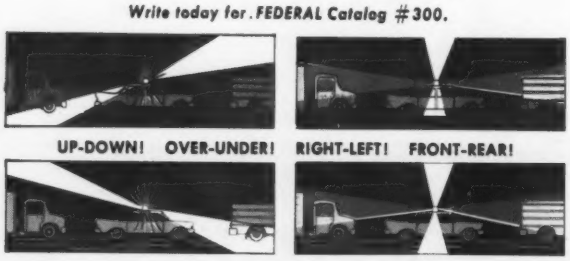
ONE FINGER OF LIGHT SLANTS TOWARD THE SKY— THE OTHER FLOODS TOWARD THE GROUND WHILE ALTERNATE BEAMS OF RED (or other color) BACK TO BACK, PROJECT AT EYE LEVEL!

The STRAT-O-RAY, with its *four powerful sealed beams,* rotating 360 degrees, is FEDERAL'S newest and finest contribution to *safer* emergency vehicle operation.

The *tilted* beams are on a separate circuit from the *horizontal* color lamps. The three position switch permits use of *color only,* to produce the effective and familiar warning of the famous Beacon Ray; the other "on" position of the switch operates *all lamps for full STRAT-O-RAY effect.*

The STRAT-O-RAY is the same size and shape as the Super Beacon Ray and is equally durable and dependable! Be sure you specify the FEDERAL STRAT-O-RAY light and the Class "Q" Coaster Siren for *your* new apparatus.

Write today for .FEDERAL Catalog #300.



FEDERAL SIGN and SIGNAL Corporation

13617 S. Western Ave., Blue Island, Ill.

Limitations of Small Lines

(*Continued from page 17*)

great many variables to be considered and the wise fire chief will generally seek to err on the side of having too much extinguishing capacity immediately available rather than too little.

Let us take another fire situation of the same magnitude. A private dining room 20 by 30 feet in size with a 14-foot ceiling and located on the mezzanine floor of a large hotel is found to be fully involved. The fire is adjacent to a large wood-panelled lobby with communicating openings which could allow heat, smoke and fire to quickly involve the first two floors of the hotel covering a city block. Theoretically, a single 1½-inch fog nozzle waved or rotated through the window should quickly extinguish the fire. Few experienced fire chiefs would chance such a procedure. The immediate need is to get lines in place adequate to confine the fire to the room and then to extinguish. Lines will be run immediately to the area above the fire to guard against upward extension. A line directed through a window from the outside could well drive the fire into the mezzanine and lobby area and result in a holocaust. Here is where theory and good practice part. Even if the first attack line from the inside is 1½-inch hose, there is danger that if the door to the fire area is opened indiscriminately that the fire fighters will be driven back because there is greater heat than the small stream can cope with.

The cubic foot area involved in fire is not the only significant criteria for estimating the cooling capacity needed for hose streams or the number of lines needed to reach and cover all essential positions. Experienced fire officers can cite numerous instances where a relatively small opening, often concealed, has allowed a fire to spread and quickly involve another area adjacent to the original fire.

Other Things to Consider

Some of the variable factors to be considered are:

1. How long has the heat been building up? In some fires, on arrival of the department, the air may be heated but the structure itself and the contents of the fire area are still relatively cool. For example, in a quick fire the room atmosphere may be hot, 1200° to 1500° F. or more, but the structure and contents may be relatively cool so that once the atmosphere is cooled the fire is practically extinguished. This is often termed a "surface" type of fire as contrasted with a deep-seated fire in both building and structure. In a deep-seated fire it is often possible to hear structural members cracking and crackling as the heat attacks the structure. Even if the area is well saturated with hose streams, the minute the stream is turned in a new direction the residual heat is sufficient to cause flames to burst forth again until the entire fire area has been cooled down with "plenty of water."
2. How fast can the heat get out of the structure? With a fire in a barn or woodshed or lightly constructed storage building, much of the heat of the fire is lost to the surrounding atmosphere. Whether the temperature of the outside atmosphere is zero or 100° F. in the shade, it is hundreds of degrees cooler than the temperature needed to support combustion in most ordinary solid fuels.

Thus, if a 1½-inch fog nozzle is operated in a lightly constructed building the expanding water vapor (steam) will carry much of the heat outside of the building.

Powhatan's DURA-FOG Nozzle

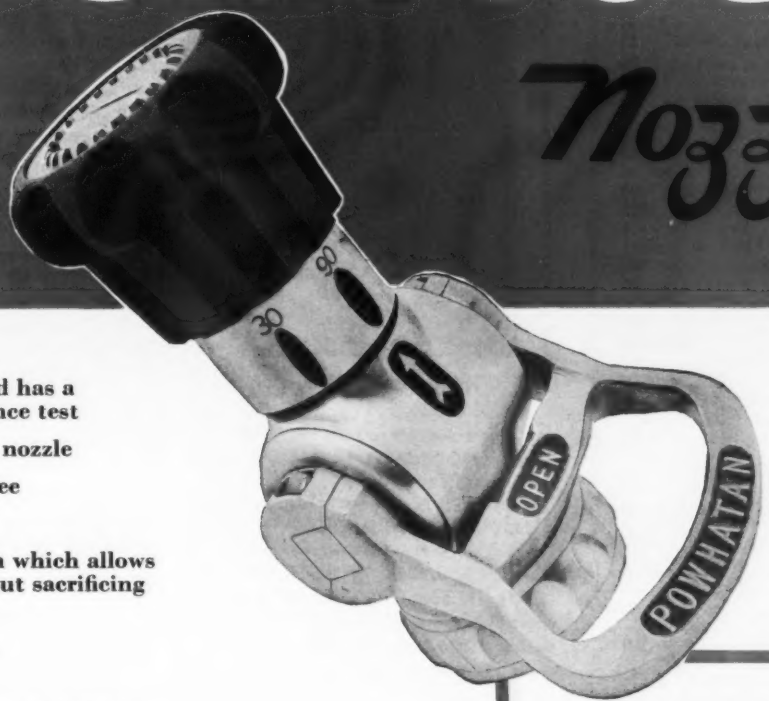


PLATE NO. 261

- Each nozzle sold has a 100% performance test
- A strong husky nozzle
- Maintenance free
- Greater reach
- Finer dispersion which allows less GPM without sacrificing effectiveness
- Denser curtain
- No kickback
- Operates easily under high pressure

CHOICE OF SWIVEL OR SOLID BASE

TRY IT OUT!

You can — by simply writing us and telling us you want to see and test it. Write today!

OVER A MILLION SHUT-OFFS AND NEVER A LEAK!

Dura-Fog Nozzles have been thoroughly bench tested, to assure dependability. We strived for 250,000 shut-offs, actually tests have gone over a million with no leak!

FLOW IN GPM AT 100 PSI NOZZLE PRESSURE

Size	Straight Stream	30° Fog Pattern	60° Fog Pattern	90° Fog Pattern
1"	20	22	32	35
1½" -60	57	60	72	88
1½" -100	95	100	105	107
2½"	135	165	190	225

REG. U.S. PAT. OFF.

POWHATAN BRASS & IRON WORKS

RANSON, WEST VIRGINIA

In The Same Location Since 1892

REG. U.S. PAT. OFF.

BUYING NEW EQUIPMENT?

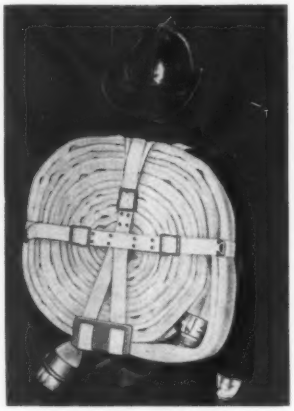
Consider the products advertised in this issue.

Item	Page
Apparatus	3, 4, 5, 32, 37
Back-pack pumps	6
Badges	27
Badges, youngsters'	37
Boots	31
Breathing apparatus	20, 21
Civil service study material	27
Couplings	38
Engine primer	39
Equipment	33
Films	27, 30
Foam	29
Helmets	28
Hydrants	2
Invalid markers	37
Jewelry, fire fighters'	37
Laundry dryers	25
Manual on Demonstration Kits	37
Nozzles	33, 35
Portable 2-way radios	27
Protective shields	26
Pumps, back-pack	6
Reflectorized signs	37
Shoulder patches	37
Signal lights	34
Trophies	37
Turnout coats	30
Warning lights	30
Wet water	26

INDEX TO ADVERTISERS

	Page
Akron Brass Manufacturing Company, Inc.	33
American Film Producers	30
American Fire Apparatus Company	39
Ira A. Anderson	37
Beacon Falls Rubber Footwear	31
Cairns & Brother, Inc.	28
Cinesound Company	26
Cook Machinery Company, Inc.	25
W. S. Darley & Company	32
Davis Coaching School	27
Elkhart Brass Mfg. Company, Inc.	38
FD Products	37
Federal Sign and Signal Corporation	34
Fyrepel Products, Inc.	26
Globe Electronics	27
Globe Manufacturing Company	30
Hook-Fast Specialties, Inc.	37
Long Island Metal Emblem Company, Inc.	37
Mack Trucks, Inc.	4, 5
Mine Safety Appliances Company	20, 21
Mueller Company	2
Nielsen-Rionda, Inc.	27
North Brunswick Volunteer Fire Co. No. 2	37
Powhatan Brass & Iron Works	35
Roberts Company	37
Rockwood Sprinkler Company	29
Seagrave Corporation	3
D. B. Smith & Company	6
S. G. Stevens Company	26
Trippe Manufacturing Company	30

this month's *News and New Products*



"Doughnut" Roll Carrier

A lightweight, sturdy device for carrying rolls of fire hose has been developed by the Atlas Safety Equipment Company, Inc., 175 N. 10th Street, Brooklyn 11, New York. It is designed to hold either a 50-foot roll of 2½-inch hose or two 50-foot rolls of 1½-inch hose. The rolled hose is placed on a sturdy aluminum base which rests on the wearer's back held by a strong web strap 1½ inches wide. The strap secures the hose vertically and horizontally and is easily adjusted for comfort. Write to the manufacturer for more information.

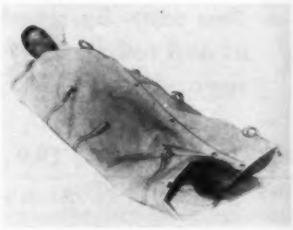
•

Chief Kirkland, Buhl, Idaho Fire Department has provided "I" (invalid) markers for all homes in his area where invalids or physically handicapped persons live. . . . Looking for accident insurance for your department? Ask *Continental Casualty Company*, Special Risks Division, 310 South Michigan Avenue, Chicago 4, Illinois, for details on its special accident policy for volunteer fire departments. . . . Keep your pump data file up to date. Write for Bulletin 8733 to *American Fire Pump Company*, Battle Creek, Michigan. . . . A timely public relations program is a Spring Clean-Up Campaign (see back cover). For lists and samples of helpful materials, write *NFPA Public Relations Department*.

Custom-tailored uniforms to fit your requirements are guaranteed by *Maier-Lavaty Company*, 227 West Van Buren Street, Department 110-B, Chicago 7, Illinois. Write them for complete information. . . . For faster clean-up operations, today's fire departments use powerful smoke ejectors. Complete how-to-use booklet free by writing to *Super Vacuum Manufacturing Company, Inc.*, 1055 East First Street, Loveland, Colorado. . . . A versatile rescue kit and shop tool is the new glass-blocksmasher with accessory equipment developed by *Boston Clip and Tag Company*, 46 Grove Street, Somerville 44, Massachusetts. . . . Cooperation with municipal services is the theme of the monthly *ADT Transmitter* publication. For your regular copy, drop a card to *ADT Company*, 155 Sixth Avenue, New York 13, New York. . . . Pumping from deep or shallow water in stream or pond is speeded with Float Dock Strainer made by *Fol-Da-Tank Company*, Box 361, Rock Island, Illinois.

Captain Ira A. Anderson, Fire Prevention Officer of the Rialto, California, Fire Department, advises that his complete manual on "Table-Top" Fire Prevention Demonstration Kits can now be ordered. This illustrated manual offers complete instructions for the construction and use of Fire Prevention Demonstration Kits and includes a 6,000-word lecture to accompany these demonstrations.

•



Stretcher Blanket

Here is a new stretcher blanket made of vinyl coated nylon fabric that is waterproof and resistant to tearing, flame and mildew. It has four tough web straps with loop handles on each side and can be used with or without poles. Measuring 6 by 6 feet, the blanket has large metal eyelets spaced 18 inches apart to permit lacing or use with ropes as a lowering sling. It folds to approximately 18 inches square. Write to Can-Pro Corporation, 19 E. McWilliams Street, Fond du Lac, Wisconsin.

New "All-Use" Extinguisher

Two new models of "All-Use" dry chemical fire extinguishers are being manufactured by American LaFrance Corporation, 54 East LaFrance Street, Elmira, New York. The 10-pound Model P-10 has received a UL rating of 1A:16B:C. The 20-pound unit, Model P-20, has larger capacity. The newly developed dry chemical powder has been under development for more than five years and can be used on Class A, B and C fires Write for catalog pages and descriptive literature.

•

Earle M. Scott, President of *Scott Aviation Corporation*, Lancaster, New York, recently announced changes in Sales Organization. L. E. Jordan, General Sales Manager, Commercial Division, has moved into the newly created position of Director of Marketing for all divisions — Commercial, Civil Aviation and Military Aviation. Richard A. Noelck has assumed the position of Director of Sales for all company divisions, and Robert J. Brewer has become Sales Manager of the Commercial Division.

BRIGHT — DURABLE

FD RESCUE MARKERS

TO "I"DENTIFY

HOMES OF THE AGED, BLIND and HANDICAPPED

- Speeds up rescue where needed.
- Good-will builder for those House-to-House inspections or your Spring Clean-Up campaign.

SEND FOR FREE SAMPLE KIT

FD PRODUCTS

Dept. F-20

90-61 TRACEY PL., ENGLEWOOD, N. J.

Headquarters for

SPARKY PRIZES, AWARDS AND GIVE-AWAYS

Spark up your school programs, parades, fairs and fund raising efforts with colorful Sparky tie-ins. Something to fit every budget.

Dolls
Badges
Rings
Bracelets
Tie Clasps
Lapel Pins
Tee Shirts
Sweat Shirts
Lighters
Cuff Links
Earrings
Pencils
Belts
Fabric Emblems

SPECIAL QUANTITY PRICES

Write for Free Catalog Today

ROBERTS CO.

BOX 444D WAYLAND, MASS.

FIREMEN!

INCREASE YOUR INCOME!

Convert your spare time into steady income selling most popular line of Belts and Buckles with Fireman's personal initials, first name or nickname with miniature replicas of actual fire equipment beautifully enameled, also lapels, tie clasps, key chains, money clips, and cuff links. Excellent repeat business. We furnish you with FREE complete sales kit. Really nice part-time money producing items.

NO INVESTMENT NECESSARY!

For full particulars, write to

HOOK-FAST SPECIALTIES, INC.

Factory — 16 Eudora St.

P.O. Box 1088F Providence, R. I.

PUMPER FOR SALE

1947 GMC FIRE TRUCK

with 500 gpm rotary pump and 500 gallon booster pump. All standard Underwriters' equipment. Recently passed Underwriters' service test. Truck presently in service.

MAKE OFFER

NORTH BRUNSWICK VOLUNTEER FIRE CO. NO. 2

R.D. 4, Box 285, No. Brunswick, N.J.

AUTO VISOR SIGN

FIREMAN

4 x 14 inches — 3-inch letters

Reflectorized . . . . . **.40** each

SIGN for FIRE APPARATUS

KEEP BACK 500 FEET

4 x 36 inches — 3-inch letters
Scotchlite Reflectorized

Aluminum plate back $5.95

Adhesive back $4.45

FIRE TRUMPET

Conversation piece. Cast aluminum replica of 1900 model. Hydrant-ladder & hook-FD and an engraving plate cast into the trumpet. Complete with 6" Golden yellow rayon cord and tassels $62.50 — Engraving 10c per letter.

EMBROIDERED SHOULDER PATCHES

Reproduced from your original design. Washable Twill, Fast Colors, Reasonable Prices

Cast aluminum, Maltese Cross car emblems, Grave Markers, Memorial plaques. Many sizes from 3" to 36".

LONG ISLAND METAL EMBLEM CO., INC.

P.O. Box 486, Merrick, L.I., N. Y.

How You Can Build and Use . . .

"TABLE-TOP" FIRE PREVENTION DEMONSTRATION KITS

By

Captain Ira A. Anderson

Fire Prevention Officer
Rialto Fire Department, Rialto, California

A complete, illustrated manual on the design, construction, wiring circuits, and use of equipment and apparatus for "TABLE-TOP" DEMONSTRATIONS of Fire Safety and Fire Prevention. Also contains a **SIX-THOUSAND WORD LECTURE TO ACCOMPANY THESE DEMONSTRATIONS!** This is the book from which the article featured in the February 1960 issue of FIREMEN Magazine was taken!!! The information in this manual will develop your "PUBLIC RELATIONS PROGRAM" to an all-time high!!!

$3.00

per copy Postpaid.

(California residents add 4% sales tax)

Discount for quantities

Allow at least three weeks for delivery.

Order now from:

IRA A. ANDERSON

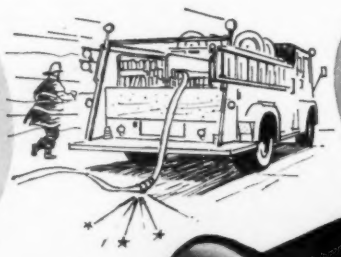
P.O. Box 332, Rialto, Calif.

ELKHART X-5 X-TRUDE

THE NEW SUPER STRENGTH COUPLING

WITH FULL RIB REINFORCEMENT

Full rib reinforcement. Note how added reinforcement of coupling is gained by continuous bead surrounding the coupling. This reinforcement is in addition to the strength already achieved by use of the new X-5 alloy.



X-5

New brass alloy developed to Elkhart specification is at least 25% stronger than used in former lightweight couplings.

Larger lugs for easier and faster hook-up.

Increased tensile strength of X-5 alloy makes coupling ideal choice for higher pressures required for expanding Dacron hose in coupling—will not deform.

See this new Coupling at I. A. F. C.

No. X-330 X-TRUDE®

Available in 1-1/2" and 2-1/2" size

Ever on the alert for better fire fighting products . . . Elkhart's new X-Trude coupling hails one of the greatest coupling improvements we have ever announced. It's a tough, rugged, lightweight coupling made of the new X-5 brass alloy that is at least 25% stronger than that used in previous lightweight couplings. Plus the added strength of this exclusive new alloy we have further strengthened the coupling by the continuous reinforcing bead that surrounds both the male and female tailpiece. The coupling also features Higbee cut non-cross threads and indicator slot on Slidewell or rocker type lugs. *Now available for immediate shipment.*

ELKHART BRASS MFG. CO., Inc., Elkhart, Ind.

More than half a century of fire fighting progress

Barton-American ENGINE VACUUM PRIMER

. . . another superior feature you get in American FIRE TRUCKS

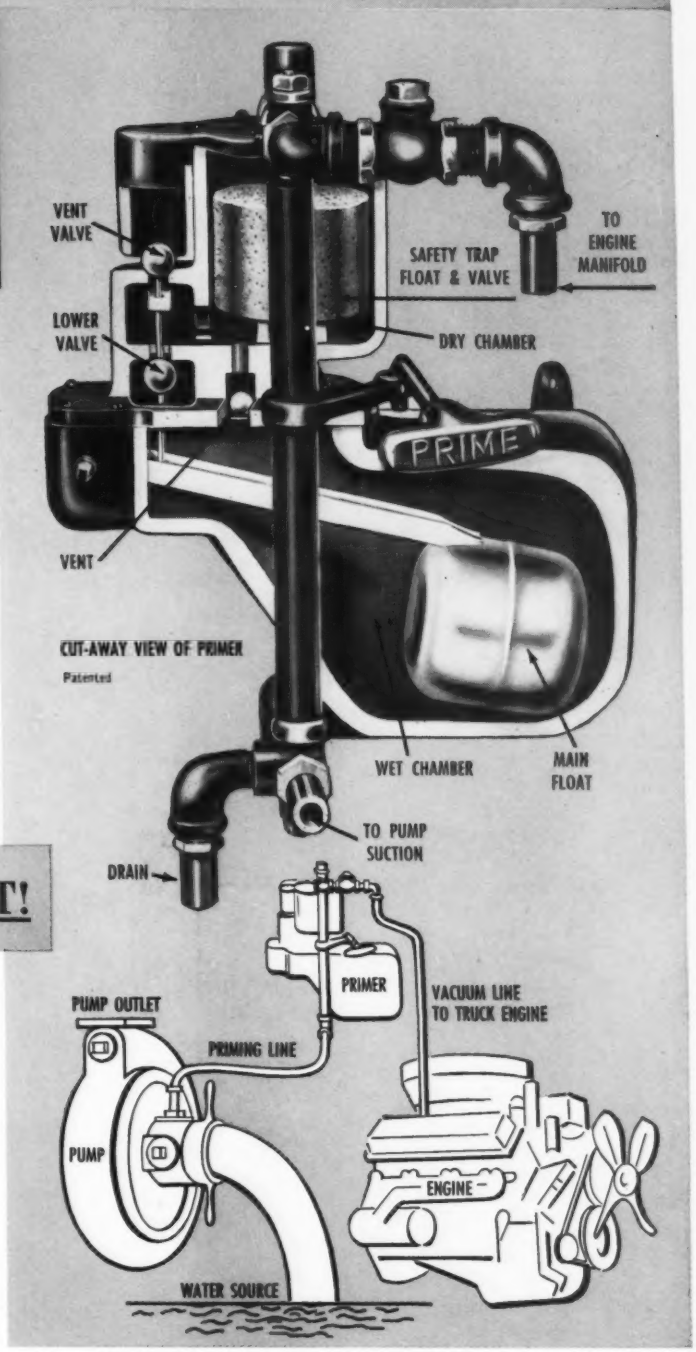
Always operates with like-new efficiency — not affected by engine wear

Employs a simple, trouble-proof principle

Requires no oil, no adjusting, no maintenance

Completely frost-proof

Always dependable



This PRIMER IS FAST!

The Barton-American has *none* of the many disadvantages of rotary priming pumps. Superior to exhaust primers, which require engine speeds as high as 3300 RPM, *the Barton-American readily primes at 1000 RPM.* If the truck engine will run, the Barton-American will prime. Patented dual float design makes it impossible for water to pass into the truck engine, eliminating possibility of engine damage.

For more details on this and other superior features you get in American Fire Apparatus — even though you don't specify them — see your nearest American representative.

American

AMERICAN FIRE APPARATUS CO.

FIRE APPARATUS CO.

Main Office: Main Street Rd., Battle Creek, Mich. Plants at: BATTLE CREEK, MICH., MARSHALLTOWN, IA., STRATFORD, ONT.

FIREMEN
60 BATTERYMARCH ST.
BOSTON 10, MASS., U. S. A.

POSTMASTER: If undeliverable FOR ANY REASON, notify sender, stating reason, on Form 3547.

FIRE DEPARTMENTS—

these Spring Clean-Up materials are for you!

Check the items you need and send this page to the NFPA — 60 Batterymarch Street, Boston 10, Massachusetts

Quantity	*Price per 100*	*per 1000*	*Amount*
.....Sparky Clean-Up Window Streamer (16" x 4")	$1.50	$12.50	$.....
.....Sparky Clean-Up Poster	3.00	25.00	$.....
.....Sparky Clean-Up Window Sticker (3" x 4" — gummed)	1.00	8.50	$.....
.....Folder — "Clean Up For a Fire Safe Home"	1.50	12.50	$.....
.....New Folder — "Stop Fires on the Job"	1.50	12.50	$.....
.....Sparky Coloring Sheet	.75	6.00	$.....
.....Phone Sticker	1.50	10.00	$.....

EXTRA SPARKY ITEMS

.....Sparky's Official Home Inspection Blank	$1.00	$ 7.50	$.....
.....Sparky Comic Book — History of Modern Fire Departments	5.00	45.00	$.....
.....Sparky Comic Book — Early Man & Fire	5.00	45.00	$.....

Quantity	*Price per 100*	*per 1000*	*Amount*
.....Sparky Comic Book — Man Learns More About Fire	$5.00	$45.00	$.....
.....Sparky Coloring Book	5.00	45.00	$.....
.....Sparky Lapel Tabs — "Help Sparky Stop Fires"	2.00	15.00	$.....
.....Sparky Rubber Face Mask (adult size only)	1.00 each		$.....
.....Sparky 5-Foot Pattern-Poster	1.35 each		$.....

OTHER TIMELY HELPS
Popular Folders

.....You Are on the Spot (Dry Cleaning)	$1.50	$12.50	$.....
.....Gasoline Hazards	1.50	12.50	$.....
.....Public Fire Enemy No. 1 (Smoking)	1.50	12.50	$.....
.....Can You Get Out? (Home Escape Planning)	1.50	12.50	$.....
.....For Your Home Workshop (Safety Tips)	1.50	12.50	$.....
.....Fire Is a Job Robber	1.50	12.50	$.....
.....ABC's of Extinguishers	2.50	20.00	$.....
.....Sparks Astray (Cutting and Welding)	3.00	23.50	$.....
.....Home Fire Safety Check List	1.50	10.00	$.....
.....School Inspection Short Check List	1.50	10.00	$.....
.....“Fire—What Would You Do?” 16-page manual of home fire safety	9.00	80.00	$.....
.....“Any Fire Traps in Your Home?” (16-page manual)	9.00	80.00	$.....
.....“Buying, Building, Owning the Fire Safe Home” Folder	5.00	35.00	$.....
.....“Know What You're Wearing” Folder	2.50	20.00	$.....

TELEVISION FILM HELPS

.....Sparky Clean-Up Film with new Sparky song — 16mm sound, black and white, 60 seconds, for Schools and TV use	Per print	$5.00	$.....
.....Same in 35mm print for theatre trailer	Per print	9.75	$.....
.....10-word printed sponsor message added to above films	Per print	2.00	$.....
.....20-second Sparky Clean-Up film (16mm) with musical sound track	Per print	3.25	$.....
.....Sparky Clean-Up slide for TV with announcement copy supplied	Each	2.25	$.....
TOTAL			$.....

All Prices F.O.B. Boston — Orders Shipped Express Collect

SEND TO .....
(Name)

.....
(Name of Organization)

.....
(Street Address)

.....
(City, Town) (State)

Check or money order for.....enclosed or bill me ( )

VOL. 2 NO. 1

MAR

61

XU